MULTIMETHOD ASSESSMENT OF DEPRESSION AND BEHAVIORAL DISTRESS IN A PEDIATRIC POPULATION

By

CHRISTINA M. RODRIGUEZ

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By

Christina M. Rodriguez

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Chair: Sheila Eyberg, Ph.D.
Cochair: Stephen R. Boggs, Ph.D.
Major Department: Clinical and Health Psychology

Growing acceptance of the existence of childhood depression is apparent in recent literature. Despite this scrutiny, research on childhood depression contains mixed results largely because of assessment issues. Studies obtain information from various sources (e.g., parents, children) and utilize different definitions of depression. Assessment of preschool children is further complicated because of skepticism about depression at this age and because of the scarcity of measures appropriate for this age group.

The study of depression in pediatric psychology translates into adjustment in medical settings. Although pediatric populations seem more likely to exhibit depressive symptoms, measures suitable for

these children are scarce. The utility of a new parent report measure, the Behavioral Upset in Medical Patients-Revised (BUMP-R), was examined in a pilot study of 81 mothers, which found increased behavioral distress upon hospitalization. Research on variables influencing adjustment has found that gender, race, socioeconomic status, and family composition are not significant factors. Greater distress may appear with younger children, maternal anxiety, and limited parent contact during hospitalization. Effects of diagnosis, duration of illness, length of hospitalization, and previous hospitalizations are unclear.

The current study explored variables influencing depressive symptoms in hospitalized children aged 4-12. Parent ratings of child distress were compared to nurse ratings and to children's responses to a pictorial measure designed in this study for hospitalized preschoolers. The day following hospital admission, an assessment battery containing standard measures of depression and measures of distress for hospitalized children was administered to 70 mothers and their children. Thirty-two nurse ratings were also obtained.

Results indicated that demographic and illness-related variables were not risk factors for hospital adjustment difficulties. Based on parent ratings, children exhibiting behavioral distress at home may be

more likely to experience adjustment problems upon hospitalization. Concerning assessment, the BUMP-R demonstrated internal consistency and concurrent validity. A factor analysis of mothers from the current study combined with the pilot study revealed four factors identified as Negativity/Agitation, Amiability, Dysphoria, and Noncompliance. The child pictorial measure also demonstrated internal consistency and correspondence with mothers' ratings. Therefore, both measures are promising for use with hospitalized children.

CHAPTER 1
INTRODUCTION

General Childhood Depression

Prevalence

After years of controversy, the recent proliferation of research suggests a growing acceptance that depression exists in children. Several comprehensive reviews of the literature estimate that the diagnosis of major depression in childhood appears in approximately 2% of 7- to 12-year-olds in the general population (see Finch & Saylor, 1984; Kaslow & Racusin, 1990; Kazdin, 1987, 1988 for reviews). However, this estimate increases to 60% in outpatient clinical populations (Kashani, Husain, Shekim, Hodges, Cytryn, & McKnew, 1981). The wide variance in current estimates of the prevalence of childhood depression are primarily due to differences in assessment, definition, and age level (e.g., Angold, 1988; Finch & Saylor, 1984). Prevalence estimates may vary according to age level because depressive symptoms differ between prepubertal children and adolescents (Ryan, Puig-Antich, Ambrosini, Rabinovich, Robinson, Nelson, Iyengar, & Twomey, 1987). In addition, because depression is defined and assessed in a variety of ways (Angold, 1988), different studies use different

criteria for establishing prevalence in a given population.

Assessment Issues

The research on general childhood depression contains numerous conflicting results. Much of the variability in estimating prevalence and in estimating the influence of variables may be attributed to difficulties in assessment. The definitions of depression determine the selection of assessment techniques (Angold, 1988). Although several studies utilize diagnostic criteria for depression (see Finch & Saylor, 1984 for review), the majority of studies define depression based on scores obtained on a variety of measures. However, many inventories gain only temporary popularity and are utilized in only a single study (Kerr, Holer, & Versi, 1987). Thus, depression is interpreted differently, which complicates questions regarding the influence of numerous variables.

With adults, assessment of depression is often based on self-report or interview data. However, different assessment methods are conducted at different ages. For instance, assessment of adolescents, like adult assessment, often utilizes self-report and interview methods. However, investigation of affective disturbance in preschool children is particularly challenging. A preschool child is not readily able to

distinguish emotions (Stone & Lamenek, 1990). Of those socioemotional measures available for assessment of preschool children, self-report measures are rare (Lichtenstein, Dreger, & Cattell, 1986). Consequently, preschool assessment relies heavily on parent report. For school age children, a larger variety of assessment techniques for depression are utilized, including self-report questionnaires, interview rating scales, parent ratings, and observational measures (see examples of observational measures in dental populations, Johnson & Baldwin, 1968 and Wright & Alpern, 1971; in medical populations, see Jay, Ozolins, Elliot, & Caldwell, 1983 and Katz, Kellerman, & Siegel, 1980). Rating scales are completed by a variety of sources, including parents, peers, and teachers.

Given the variability in sources, correspondence among raters becomes a significant concern. A comprehensive review of correspondence issues in measurement of both behavioral and emotional childhood problems found relatively low correspondence among raters (Achenbach, McConaughy, & Howell, 1987). Several other studies have documented low correlations between self-reported depression and parent ratings of depression (e.g., Kazdin, 1989; Kazdin, French, Unis, & Esveldt-Dawson, 1983; see Kaslow & Racusin, 1990; Kazdin, 1987, 1988 for reviews). A few studies have

demonstrated adequate correlations between raters (e.g., in normal children, Leon, Kendall, & Garber, 1980; in pediatric population, Eason, Finch, Brasted, & Saylor, 1985). Despite the general finding of low or poor correspondence, most researchers in the area of depression conclude that multiple sources are required in order to clarify the diagnostic picture (e.g., Kaslow & Racusin, 1990; Kazdin, 1988). In fact, Kazdin, Colbus, & Rodgers (1986) describe the application of discriminant analyses which combines a battery of measures to maximize the classification, i.e., diagnosis, of depression in children. Therefore, in spite of the poor correspondence between raters, current research encourages assessment of childhood depression from multiple sources.

Risk Factors

In addition to variability due to assessment methods, a number of variables may affect the prevalence of childhood depression, including gender and age of the child and demographic characteristics, such as race, socioeconomic status, and family composition. A fair amount of research has investigated the effect of sex on depression. In childhood depression, no gender differences emerge for children ages 6-12 (Angold, 1988; Kaslow & Racusin, 1990). The prevalence, however, increases in females

throughout adolescence and approaching adulthood (Kazdin, 1987, 1988). Consequently, the sex ratio of depression for females to males nears 2:1 by adulthood (Boyd & Weissmann, 1981).

Nevertheless, for prepubertal children, several studies utilizing various assessment instruments have corroborated the 1:1 sex ratio. Among these studies, scores on a clinician-administered interview rating scale revealed no sex differences (Shanahan, Zolkowski-Wynne, Coury, Collins, & O'Shea, 1987). In addition, normative data on over 1400 schoolchildren grades 2-8 for one of the most widely-used self-report depression scales, the Children's Depression Inventory (CDI; Kovacs, 1983, 1985), found negligible gender differences, and thus separate norms were not recommended (Finch, Saylor, & Edwards, 1985). This finding was substantiated when no gender differences on the CDI were found in a smaller sample of 166 children grades 3-6 (Reynolds, Anderson, & Bartell, 1985). A study of parent-reported childhood depression also reflects this equal prevalence for children grades 3-6 (Leon et al., 1980; Reynolds et al., 1985). Furthermore, no statistically significant sex differences were found on a measure of peer-nominated depression (Lefkowitz & Tesiny, 1980).

Only a few studies have demonstrated sex differences in depressive symptomatology for prepubertal children. For instance, minor differences were found in which girls scored higher than boys on a different self-report measure (Children's Depression Scale; Reynolds et al., 1985). A study of 8- to 13-year-olds also found a trend for girls to report more depressive symptoms than boys on the CDI (Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984). These conflicting findings may reflect variability in assessment or in populations, or they may indicate that observers respond differentially based on the child's sex (Saylor, Finch, Spirito, & Bennett, 1984). Despite these mixed results, the bulk of the literature continues to support the 1:1 sex ratio for depression in prepubertal children.

As mentioned above, an interaction between sex and age appears, leading to an increased incidence of depression in adolescent girls (Kazdin, 1987, 1988). A significant interaction effect between gender and age was found in a study of over 1000 schoolchildren, with adolescent girls reporting the most unhappiness in a structured interview (Webb & VanDevere, 1985). Although depressive disorder is relatively uncommon in prepubertal children, the prevalence of depression rises with increasing age (Angold, 1988; Kaslow &

Racusin, 1990). Developmental differences in the manifestation of depression may also lead to different age groups exhibiting different features of depression (Kazdin, 1987). For example, although Ryan et al. (1987) found little variation in depressive symptomatology between children and adolescents, results did identify several features on which the age groups differed (e.g., lethality of suicide attempts, hopelessness, symptoms of anxiety).

In contrast to studies of school-aged and adolescent children, depression in the lower end of the age range, children under the age of 6, is studied infrequently. Skepticism regarding depressive features in preschoolers prevails despite clinical reports of sadness and suicide attempts in children as young as three years (e.g., Pfeffer & Trad, 1988). Although research using preschool populations has been limited, one study utilizing a multimethod assessment of normal 2- to 7-year-olds found 9 of 109 (8%) children displaying depressive symptoms (Kashani, Holcomb, & Orvaschel, 1986). Therefore, age differences in prevalence may represent measurement variance given that different assessment devices are administered to different age groups (Kazdin, 1988).

Other demographic characteristics have been less well studied. With regard to ethnicity, no clear

racial differences have been found in depressed prepubertal children (Angold, 1988; Kaslow & Racusin, 1990). Although a few studies have suggested that depression may be associated with lower socioeconomic status (see Angold, 1988 for review), depressive symptomatology was not found to be related to father's education or family income (Kandel & Davies, 1982). Finally, no differences in socioeconomic status or family composition (i.e., child living in single-parent home, two-parent home) were found between depressed or nondepressed clinic children (Kaslow, Rehm, Pollack, & Siegel, 1988). The effects of these demographic variables on childhood depression, however, are seldom explored.

Pediatric Populations

Definition Issues

Given the relationship between stressful life events and depressive symptoms (e.g., Mullins, Siegel, & Hodges, 1985), pediatric psychology has evidenced a growing interest in depressive symptoms in medical populations. Few studies have examined the prevalence of major depression in pediatric populations. In contrast, several studies have focused on adjustment in medical settings. The depressive symptoms associated with poor adjustment in pediatric populations

encompasses a broad range of symptoms, including general subjective distress, dysphoric mood, behavioral manifestations of emotional distress, and anxiety. This wide range of symptoms reveals the difficulties involved due to definitional variability. Many of the symptoms studied are features typically associated with depression, whereas other symptoms are externalizing responses associated with general emotional or psychological distress. Several studies have demonstrated a relationship between externalizing behavior problems and depression (e.g., Leon et al., 1980). Therefore, adjustment problems in pediatric populations are examined in a variety of ways.

Historically, psychologists have been interested in children's adjustment to medical procedures and hospitalization. A child's short-term reaction to medical intervention may vary widely. These depressive reactions can include restlessness, apathy, and sleep and appetite disturbances (Jessner, Blom, & Waldfogel, 1952), panic and crying (Prugh, Staub, Sands, Kirschbaum, & Lenihan, 1953), as well as anger and aggression (Jensen, 1955). Additionally, a large scale follow-up study compared 1000 children hospitalized before age 5 to a nonhospitalized control group (Douglas, 1975). Results indicated that the hospitalized children exhibited numerous difficulties

corresponding to early hospitalization, including conduct problems, delinquency, academic difficulty, and unstable work history. Another study of pediatric surgery patients found that, without intervention, children displayed more behavioral difficulties nearly one month after hospitalization (Melamed & Siegel, 1975). This early research demonstrated that children often adjust poorly to hospitalization or medical procedures.

Prevalence

The study of poor adjustment to hospitalization is susceptible to similar difficulties in estimating prevalence as those difficulties in general childhood depression. Different age groups, definitions, and assessment techniques are utilized. Although one study found nearly 90% of pediatric surgery patients displayed behavioral difficulties following hospitalization (Prugh et al., 1953), most estimates of depressive symptoms in pediatric populations are more conservative. In children with physical handicaps or chronic illness, poor adjustment is reported as ranging from 13-26% based on parent report, approximately two times the rate found in healthy children (Wallander, Varni, Babani, Banis, & Wilcox, 1988). In a review of studies using diagnostic criteria (derived from DSM-III criteria), estimates of depressive symptoms in both

inpatient and outpatient pediatric samples ranged from 7-40%, with the wide variability possibly due to different age ranges and different medical populations (Finch & Saylor, 1984). In a study of 7- to 12-year-old hospitalized children, 38% exhibited dysphoric mood (Kashani, Barbero, & Bolander, 1981). An examination of a pediatric psychology service in a children's hospital found 19% of consultations were referred for depression or suicide attempts and 12% of the consultations were referred for adjustment to chronic illness (Olson, Holden, Friedman, Faust, Kenning, & Mason, 1988). Thus, pediatric populations may be more likely to display depressive symptoms than the general child population.

Assessment Issues

As mentioned above, the assessment of pediatric patients' adjustment involves symptoms from overlapping constructs and may include symptoms of major depression, dysphoric mood, behavioral concomitants of emotional upset, and symptoms related to anxiety. Assessment in pediatric populations shares difficulties similar to the assessment of depression in the general population. Problems with correspondence among raters appear in the pediatric psychology literature as well as in the general childhood depression literature. Rating scales are typically administered to parents,

teachers, and health personnel (see Katz et al., 1980 for example of nurse ratings in pediatric populations).

Compounding the usual assessment issues, the evaluation of emotional distress in pediatric populations is further complicated by the scarcity of measures appropriate for the assessment of these children. The application of standard measures of depressive symptoms, such as the CDI, may not be suitable for hospitalized children. For example, the CDI did not differentiate between a sample of chronic headache sufferers and a non-headache control group (Wisniewski, Naglieri, & Mulick, 1988). Similarly, pediatric inpatients attained CDI scores comparable to gender and age-matched schoolchildren (Saylor, Finch, & McIntosh, 1988). In fact, one study found that normal children tended to report more depression on the CDI than cancer patients, which the researchers suggest reflects denial of symptoms (Worchel, Nolan, Willson, Purser, Copeland, & Pfefferbaum, 1988). In contrast, another study found that children with recurrent abdominal pain scored significantly higher on the CDI than healthy children (Walker & Greene, 1989). These mixed results with the CDI question its utility in pediatric populations.

Likewise, a clinician-administered structured interview, the Children's Depression Rating Scale

(CDRS; Poznanski, Cook, & Carroll, 1979), appears to be as limited as the CDI. A study of migraine patients found no difference in CDRS scores compared to a control group of children (Cunningham, McGrath, Ferguson, Humphreys, D'Astous, Latter, Goodman, & Firestone, 1987). A closer examination of the CDRS administered to pediatric cancer patients found significant overlap between depressive symptoms and impairment due to illness (Heilgenstein & Jacobsen, 1988). Thus, the authors found that measures which include somatic symptoms may overestimate the presence of depression.

Instruments which target emotional upset in pediatric populations are few in number. The Observation Scale of Behavioral Distress (Jay et al., 1983) interprets behavioral distress as behaviors indicative of anxiety and pain. Similarly, an observational pain rating scale for children aged 2-6 includes some "depression-like" items (Gauvain-Piquard, Rodary, Rezvani, & Lemerle, 1987). However, both observation rating scales were based on cancer patients and both scales feature an emphasis on pain behavior rather than on depressive symptoms. In contrast, a parent rating scale, the Behavioral Upset in Medical Patients--Revised (BUMP-R; Saylor, Pallmeyer, Finch, Eason, Trieber, & Folger, 1987), focuses on emotional

distress and was devised for hospitalized children with a variety of diagnoses.

Risk Factors

Factors which influence the prevalence of childhood depression in the general population may also affect pediatric populations. With respect to gender differences, results have been mixed. Consistent with findings in the general childhood depression literature, a study of pediatric cancer patients ages 2-20 found no gender differences on an observational measure of behavioral distress during a painful medical procedure (Jay et al., 1983). Moreover, no sex differences were found in hospitalized pediatric patients ages 5-15 on self-reported depression, interview-rated depression, or parent-reported behavioral upset (Saylor et al., 1987). One study of hospitalized children resulted in a greater number of boys diagnosed with depression, although this subsample was small (Kashani, Barbero, & Bolander, 1981). Some studies have found girls demonstrated more behavioral distress during painful medical procedures (e.g., Katz et al., 1980; Melamed & Siegel, 1975). Although the literature suggests that girls may exhibit more distress, evidence for overall gender differences in depressive symptoms for pediatric populations is limited.

The effect of age on the adjustment of pediatric patients contrasts with findings in the general childhood depression literature. In the general population, the prevalence of depressive symptomatology increases through childhood and adolescence. However, in a study conducted with cancer patients, age was the strongest predictor of distress during medical procedures, with younger children exhibiting greater distress (Jay et al., 1983). Another study of a pediatric cancer population aged 1-17 also found younger children expressed more distress during a painful medical procedure (Katz et al., 1980). Additional support for the inverse relationship between age and distress was found when younger hospitalized children were rated by parents as more distressed (Saylor et al., 1987). Furthermore, an interaction between sex and age may occur. In contrast to the trend in general child depression for adolescent females to demonstrate more depressive symptoms, younger females may exhibit more distress in pediatric settings (e.g., Melamed & Siegel, 1975). Overall, younger pediatric patients appear more likely to display behaviors suggestive of depressive symptoms and emotional distress.

Information on the influence of other demographic variables (such as race, socioeconomic status, or

family composition) on adjustment in pediatric populations is even more limited than that found in research on general childhood depression. Of the few studies available, appropriate behavior in a dental setting was associated with socioeconomic status, with upper SES children exhibiting less negative behavior (Wright & Alpern, 1971). Influence of race and family composition are not known and thus may correspond to data obtained on general childhood depression. Consequently, future research should explore the influence of these demographic variables on the emotional adjustment of pediatric patients and whether these influences correspond to those found in general childhood depression.

Several other variables related to pediatric populations may also affect adjustment to hospitalization. These variables include maternal anxiety, parental presence in the hospital, diagnosis, prior medical experience, onset of illness, and length of hospitalization. With regard to maternal anxiety, mothers' self-report of anxiety was positively related to their children's negative behavior during dental visits (Johnson & Baldwin, 1968; Wright & Alpern, 1971). Moreover, mother's state anxiety was positively correlated with a physiological measure of anxiety in pediatric patients (Vardaro, 1978). Maternal anxiety

and depression were significantly higher in children with recurrent abdominal pain than in healthy controls (Walker & Greene, 1989). Another study of pediatric cancer patients demonstrated a significant positive correlation between parental trait anxiety and the child's behavioral distress (Jay et al., 1983). Furthermore, poor parental coping patterns were associated with the depressive symptom of hopelessness in children with cancer (Blotcky, Raczynski, Gurwitch, & Smith, 1985). Thus, a mother's response to her child's hospitalization may affect the child's adjustment.

A concept related to maternal anxiety, whether the parent is present as well as the duration of contact during hospitalization, may also influence the emotional adjustment of the hospitalized child. For example, maternal presence was associated with more negative behavior from children receiving injections (Shaw & Routh, 1982). However, in another study, the amount of time spent with a hospitalized child did not predict depression or behavioral distress (Saylor et al., 1987). Assuming that a factor in poor hospital adjustment lies in separation, Peterson, Mori, and Carter (1985) argue for the importance of encouraging parent contact and enlisting parental assistance during hospitalization. Although parental contact may ease

the child during hospitalization, the conflicting findings suggest that the role of parent contact is either unclear or setting-specific.

The effect of diagnosis on adjustment to hospitalization has not been studied closely in pediatric populations. The literature on depression in adult medical patients notes differences in prevalence of symptoms as a function of medical diagnosis (e.g., von Ammon Cavanaugh, 1986). For instance, the highest self-reported depression scores were found in patients with gastrointestinal disease, cancer, bone and connective tissue disease, renal disease, and neurological disease. Few studies have investigated this aspect in pediatric samples. One investigation found no differences in behavioral distress due to type of cancer diagnosis (Jay et al., 1983). Another study comparing Crohn's disease, ulcerative colitis, and cystic fibrosis found significantly greater prevalence of depression in Crohn's disease compared to cystic fibrosis (Burke, Meyer, Kocoshis, Orenstein, Chandra, Nord, Sauer, & Cohen, 1989). However, research has not fully examined the differential adjustment of children based on the wide variety of medical diagnoses.

Previous medical experience may also influence the pediatric patient's emotional adjustment to hospitalization. A study of hospitalized children

found that the total number of days spent in previous hospitalizations predict higher parent ratings of their child's emotional distress during the current hospitalization (Saylor et al., 1987). In contrast, Jay et al. (1983) suggest that children may habituate to painful medical procedures because behavioral distress was negatively correlated with number of previous medical procedures. With regard to dental visits, no relationship was found between behavior during the visit and history of unpleasant medical experiences (Johnson & Baldwin, 1968). Thus, these mixed results indicate that the relationship between prior medical experience and emotional adjustment is not well understood.

Onset of illness has also not been extensively investigated. Time since diagnosis was significantly negatively correlated with behavioral distress during a medical procedure (Jay et al., 1983), further supporting the idea that children habituate to aversive medical procedures. Nevertheless, chronicity of illness as a variable in hospital adjustment has not been studied. A related concept, length of hospital stay, has also not received much research attention. In an adult medical population, length of hospitalization was not related to psychological adjustment (Levenson, Hamer, Silverman, Rossiter,

1986-1987). Both variables, onset of illness and length of hospitalization, warrant further investigation.

Pilot Study

Introduction and Rationale

Given the many unanswered issues regarding adjustment, a pilot study was conducted to examine the applicability of a new measure in studying variables influencing distress in a hospitalized pediatric population aged 4-12. Few studies have investigated depressive symptomatology in pediatric populations of preschool and pre-literate children. Moreover, measures specifically designed to assess distress in medical settings are limited.

The pilot study focused on the application of a new parent rating scale of behaviors associated with depression and anxiety (Saylor et al., 1987). This rating scale involves the evaluation of the frequency of specific behaviors, not a parental interpretation of emotional distress. Moreover, this brief questionnaire does not require direct observation by a trained clinician. Thus, preliminary findings regarding the influence of background variables on adjustment to hospitalization were gathered.

Methods

Subjects. The sample consisted of 81 mothers of hospitalized children (49 boys, 32 girls) from consecutive pediatric admissions at Shands Hospital in Gainesville, Florida. Ages of the children ranged from 4 years, 1 month to 11 years, 8 months (M = 6 years, 8 months; SD = 1 year, 11 months). The sample of children was 73% White and 27% African-American; 64% of the children lived in two-parent homes and 32% lived in single-parent homes. The sample was predominantly lower to middle SES (95%), based on the five levels of social class as assessed by Hollingshead's (Myers & Bean, 1968) Two Factor Index of Social Position (Class 1 = 3%; Class 2 = 2%; Class 3 = 17%; Class 4 = 40%; Class 5 = 38%).

With respect to illness-related variables, 27% of the children had never been previously hospitalized, 24% had one prior hospitalization, and the remaining 49% had multiple hospitalizations (ranging from 2 to 28), with the number of hospitalizations M = 6.1, SD = 15.8. Duration of illness ranged from diagnosis at birth to diagnosis upon admission to the hospital, with 47% of the patients diagnosed within the past six months.

Medical diagnoses obtained from mothers were subsequently categorized into illness groups derived

from Nelson's Textbook of Pediatrics (Behrman, Vaughan, & Nelson, 1987), with 79% of the sample falling into one of six groups. Twenty percent of those children classified were diagnosed with cardiovascular or respiratory illnesses (e.g., pneumonia, tetralogy of fallot, cystic fibrosis). Fourteen percent were hospitalized for immunity, allergy, or related diseases (e.g., asthma, reflex sympathetic dystrophy). Another 17% were experiencing illnesses interfering with the digestive system (e.g., Hirshsprung's disease, inflammatory bowel disease, appendicitis). Nineteen percent of the patients were diagnosed with urinary problems (e.g., reflux, nephrotic syndrome, kidney infection). An additional 17% were classified with diseases of the nervous system (e.g., spina bifida, Hallervorden spatz, hydrocephalus). Diagnoses had not been identified for another 13% of the children. The seventeen patients not categorized into the above groups had been diagnosed with several different illnesses (e.g., burns, autism, leg fracture) and did not conform with the six illness groups.

Furthermore, descriptions of the clinical course of illnesses were obtained form Nelson's Textbook of Pediatrics (Behrman et al., 1987) to identify diagnoses based on chronicity. Sixty-eight children in the sample were thus classified, with 28% of these

receiving diagnoses for acute illnesses and 72% receiving diagnoses for chronic illnesses. The remaining thirteen diagnoses not categorized on chronicity represent children with ambiguous or unknown illnesses.

In addition to data collected on mothers, eleven fathers also participated in the pilot study. Three of these fathers completed the measure along with their spouses, whereas the remaining eight fathers were the only parent available for participation in the study.

Children who exhibited mental or physical limitations which would interfere with parental report of distress were not included in the sample. For instance, children with a developmental delay or hearing impairment would complicate parental response to items regarding conversational ability (e.g., "Refuses to speak") or on items requiring comprehension of requests (e.g., "Accepts advice or instructions easily"). Determination of whether the child met these exclusionary criteria was made through interaction with the child and soliciting the judgment of the parent and/or nurse.

Measure. The Behavioral Upset in Medical Patients--Revised (BUMP-R; Saylor et al., 1987) is a 56-item parent rating of the child's behavior corresponding to emotional distress at the hospital and

at home (See Appendix A). This scale is a revision of the adult version (Zeldow & Braun, 1985) consisting of a 32-item checklist of behaviors that nonpsychiatric patients may exhibit in hospital settings. Patient behaviors were rated by nurses on a Likert scale ranging from 0 to 4. This scale range indicates the frequency of behavior, with 0 representing "never" and 4 representing "always."

Saylor et al. (1987) revised the scale for use with children by having five judges independently evaluate which items were inappropriate for children. Those items deemed inappropriate by a majority of judges were deleted, yielding a 28-item scale. A sample item is:

Looks depressed or sad.....Never
Sometimes
Often
Usually
Always

Scoring of the BUMP-R parallels the original adult version. However, instead of ratings by nurses, parents initially rate the child's behavior in the hospital followed by ratings of the same behaviors at home. Therefore, the BUMP-R provides a parent rating of the child's behavioral upset in the hospital and at home, prior to hospitalization.

Psychometric data are limited due to the recency of the measure's development. For the adult version, internal consistency was reported as .93 and test-retest reliability over variable intervals was reported as .66. Four factors were identified from 213 inpatient adults, including behavioral regression, poor patient-staff relationship, depression and anxiety, and passivity and withdrawal (Zeldow & Braun, 1985).

Procedure. Participation was solicited the day following the child's admission to the hospital. Mothers were instructed to complete the BUMP-R in the hospital room, rating their child's behavior since the current hospitalization as well as rating their child's behavior at home.

Results and Discussion

Analyses indicated that age, SES, and the BUMP-R scores were normally distributed. However, the number of previous hospitalizations and the duration of illness were not normally distributed. Consequently, analyses utilizing these two illness variables are based on Spearman rho correlation coefficients.

Whereas no sex differences were found in the BUMPR-Home rating of distress, a trend for girls (M = 29.8, SD = 11.4) to exhibit more distress in the hospital than boys (M = 24.9, SD = 13.7) emerged (t = 1.67, p = .09). As expected, no race or family

composition differences were found. There were also no significant differences in the BUMPR-Hospital ratings due to diagnosis based on the six categories of illness ($F(63) = 1.12$, $p > .05$). Only marginal differences for chronicity of illness ($t(66) = 1.73$, $p = .09$) were found on the BUMPR-Hospital, with children diagnosed with acute illnesses ($M = 32.1$, $SD = 14.4$) scoring higher than those diagnosed with chronic illnesses ($M = 26.3$, $SD = 11.6$).

Age was significantly correlated with hospital distress ($r = -.24$, $p < .05$), with younger children obtaining higher distress ratings than older children. Behavioral distress in the hospital or at home was not significantly related to SES, duration of illness, or number of previous hospitalizations.

Ratings of hospital distress were significantly associated with home distress ($r = .48$, $p < .0001$). In addition, maternal ratings of their child's behavioral upset in the hospital ($M = 26.8$, $SD = 13.0$) were significantly higher ($t(79) = 2.67$, $p < .01$) than ratings of distress behaviors at home ($M = 23.1$, $SD = 11.3$), suggesting that mothers observed increased behavioral distress following hospitalization.

Purpose of Study and Hypotheses

The purpose of the current investigation was two-fold. First, variables affecting behavioral upset in a hospitalized population aged 4-12 were further explored. Second, issues regarding assessment modalities were studied. Specifically, differences among raters were investigated as well as a comparison of measures designed to assess distress in medical populations with measures more commonly used in the assessment of depression. As part of the assessment battery, a newly designed self-report scale appropriate for pre-literate children in hospital settings was included. The usefulness of this new measure for hospitalized children was of particular interest.

Assessment of depression was obtained following hospital admission via self-reported behavioral distress and depression, nurse report of the child's behavioral distress, and parental report of their child's depression and behavioral distress as well as the parent's own anxiety in the hospital setting. No significant differences in the outcome measures due to sex, race, socioeconomic status, or family composition (i.e., single v. two-parent homes) were anticipated. The following hypotheses were tested.

(1) Age and grade differences were expected, with younger children exhibiting greater emotional distress.

(2) Differences in depression and behavioral upset were hypothesized for different diagnostic groups.

(3) Onset of illness, number of prior hospitalizations, and length of current hospital stay were expected to be positively related to behavioral upset and depression.

(4) Number of hours spent with parent was expected to be negatively correlated with adjustment to hospitalization.

(5) All outcome measures, including parental anxiety, were hypothesized to be intercorrelated.

(6) In addition, behavioral distress was expected to be rated higher in the hospital setting as compared to home, indicating distress at hospitalization.

CHAPTER 2
METHODS

Subjects

Seventy mothers and their children were recruited from consecutive pediatric admissions at Shands Teaching Hospital. The sample of children consisted of 29 males and 41 females between the ages of 4 years, 2 months and 12 years, 11 months (M = 8 years, 6 months, SD = 2 years, 8 months). Racial composition was 66% White, 27% African-American, and 7% Other. With regard to school grade level, there were 10% of the children not attending school, 4% in preschool programs, 12% in kindergarten, 16% in the first grade, 11% in the second grade, 10% in the third grade, 10% in the fourth grade, 13% in the fifth grade, 10% in the sixth grade, and 4% in the seventh grade.

The family composition of the sample consisted of 66% of the children living in two-parent homes and 34% of the children living in single-parent homes. Although primarily lower to middle SES (90%), the sample included all five levels of social class as measured by Hollingshead's (Myers & Bean, 1968) Two-Factor Index of Social Position (Class 1 = 3%; Class 2 = 7%; Class 3 = 16%; Class 4 = 37%; Class 5 = 37%).

Based on diagnoses reported by mothers, 77% of the children were divided into six diagnostic groups based on Nelson's Textbook of Pediatrics (Behrman et al., 1987). Of those diagnoses categorized, 19% of the children were hospitalized for cardiovascular or respiratory difficulties (e.g., cystic fibrosis, cardiac myopathy, coronary artery disease). Twenty-two percent of the children were diagnosed with immunity, allergy, or related diseases (e.g., HIV, asthma, juvenile rheumatoid arthritis) and 20% percent of the children were experiencing difficulties involving the digestive system (e.g., cleft lip and palate, alpha-antitrypsin deficiency, gastroenteritis). An additional 13% of the children were diagnosed with urinary difficulties (e.g., nephrotic syndrome, urinary tract infection, bladder infection). Thirteen percent of the patients had been hospitalized for diseases affecting the nervous system (e.g., spina bifida, seizure disorders). For another 13% of the children, diagnosis had not been determined (e.g., fever of unknown origin). The sixteen children not classified into diagnostic groups had received a variety of diagnoses, preventing assignment to a group of adequate number for analyses. These unclassified diagnoses included viral meningitis, diabetes, snakebite, and sickle cell anemia.

In addition, 62 of the diagnoses were categorized on chronicity based on Nelson's Textbook of Pediatrics (Behrman et al., 1987) description of pathogenesis. Thirty-five percent of diagnoses were described as acute illnesses and 65% of diagnoses were identified as chronic illnesses. The eight children not classified on chronicity had undiagnosed illnesses.

Forty percent of the sample of children had never been previously hospitalized, 12% of the children had been hospitalized once before, whereas 43% had been hospitalized on multiple occasions (ranging from 2 to 20 prior hospitalizations), with prior hospitalizations $\underline{M}$ = 3.2, $\underline{SD}$ = 5.1. The time spent hospitalized during the study ranged from 1 day to 29 days ($\underline{M}$ = 5.0, $\underline{SD}$ = 4.8) with 54% hospitalized for three days or less. The duration of illness associated with their diagnosis ranged from newly diagnosed to diagnosis at birth, with 41% diagnosed within one month, and an additional 20% within six months. The average number of hours the parent spent with the child in the hospital in a 24 hour period ranged from 3 hours to 24 hours a day, with 67% of parents reporting they spent 24 hours a day with their child and 17% spending between 18 and 23 hours with their child.

Thirty-two of the children involved in the study also received behavior ratings from their nurses. In

addition to the participation of mothers, thirteen fathers were also involved in the study. Five of the fathers were spouses of mothers who also participated in the study whereas eight fathers were the only parental respondents involved in the study.

Children who manifested mental or physical deficits which would impede responses on the child self-report and parent measures were excluded (e.g., profound mental retardation, lack of language development, significant vision or hearing impairment). Comprehension problems or the inability to see the pictures, for example, would interfere with the child's responses on the Child-BUMP. The evaluation of whether a child met these exclusionary criteria was made through interaction with the child and from parent and/or nurse judgments. Informed parental consent and child verbal assent were independently obtained. Basic demographic information and information regarding illness was collected on a summary sheet (See Appendix B).

Measures

The Behavioral Upset in Medical Patients--Revised (BUMP-R; Saylor et al., 1987). As detailed in the description of the pilot study (p.23-25), the BUMP-R is a 56-item parent rating of the child's behavior

corresponding to emotional distress at the hospital and at home (See Appendix A). Patient behaviors are rated by parents on a Likert scale ranging from 0 to 4. In addition, the child's nurse completed the BUMP-R questions for behavior observed in the hospital.

The Personality Inventory for Children, Depression Scale (PIC-D; Lachar & Gdowski, 1979; Wirt, Lachar, Klinedinst, & Seat, 1977). The PIC-D is one of 16 profile scales of the PIC, a comprehensive 600-item, true-false parent rating measure of psychological adjustment for children ages 3-16.

The Depression scale contains 46 rationally-derived items. A sample item is:

My child is usually in good spirits .....True False

These items yield ten interpretable factors, with Brooding/Moodiness and Social Isolation accounting for 56% of the variance. The eight other factors are Crying Spells, Lack of Energy, Pessimism/Anhedonia, Concern with Death and Separation, Serious Attitude, Sensitivity to Criticism, Indecisiveness/Poor Self-Concept, and Uncommunicativeness. A Total Depression scale score is obtained.

With respect to validity, the PIC-D correlated significantly with all scales on the Conners Parent Questionnaire except the Antisocial Scale and

correlated with the Children's Depression Inventory (Leon et al., 1980). Moreover, the Depression scale correlated with social withdrawal, depression, uncommunicativeness, and social subscales of the Child Behavior Checklist (Kelly, 1982). Test-retest reliability was reported as ranging from .80 to .94 and internal consistency (coefficient alpha) of .86 (Wirt et al., 1984).

The State Trait Anxiety Inventory (STAI, Form Y) (Spielberger, 1983). The STAI consists of two self-report scales measuring state anxiety and trait anxiety. The form used in this study is a revision of an earlier version (Spielberger, Gorsuch, & Lushene, 1970). In contrast to the earlier version which had items related to depression, Form Y measures feelings of anxiety discriminated from symptoms of depression. The State Anxiety scale consists of 20 statements about how the subject feels "right now, at this moment." The Trait Anxiety scale consists of 20 statements about how the subject generally feels. Subjects are asked to rate the intensity of feelings on a Likert scale ranging from (1) not at all, (2) somewhat, (3) moderately so, (4) almost always. The following sample item is from the Trait Anxiety scale:

I feel nervous and restless.....Not at all
Somewhat
Moderately so
Almost always

The following sample item is from the State Anxiety Scale:

I feel strained.....Not at all
Somewhat
Moderately so
Almost always

Test-retest correlations for the Trait Anxiety scale range from .73 to .86 for college students. Stability on the State Anxiety scale, ranging from .16 to .62, reflects that state anxiety is influenced by situational factors (Spielberger, 1983). With regard to internal consistency, the median alpha coefficient was reported as .93 for State Anxiety and .90 for Trait Anxiety (Spielberger, 1983). The Trait Anxiety scale has demonstrated concurrent validity with such measures as the Taylor Manifest Anxiety Scale (Taylor, 1953) and the scores on the state anxiety scale have been correlated with situational stress (see Spielberger, 1983 for review).

Parents were instructed to complete the State Anxiety items for how they felt at that moment, during the evaluation. Then they were asked to complete the

Trait Anxiety items for their general feeling since their child was hospitalized.

The Children's Depression Inventory (CDI) (Kovacs, 1983, 1985; Finch et al., 1985). The CDI is a 27-item self-report depression scale appropriate for children ages 8 and older. Each item consists of three statements representing graded levels of severity of a depressive symptom and the child selects one of the three statements. A sample item is:

I feel like crying everyday.

I feel crying many days.

I feel like crying once in a while.

The choices are valued from 0 to 2, with high scores indicating depression. The internal consistency of the CDI (coefficient alphas) was reported as ranging from .70 to .94 (Kovacs, 1985; Saylor et al., 1984). Test-retest reliability ranged from correlations of .38 to .87 (Saylor et al., 1984).

The Behavioral Upset in Medical Patients-Child Self-Report Version (Child-BUMP). The Child-BUMP is a 27-item pictorial scale designed for use in this study (See Appendix C). All questions from the BUMP-R for the hospital setting (with one exception) were rephrased in language understandable for children ages 4-12. The questionnaire was rephrased by three independent sources and the simplest items selected.

The scale was modeled according to the Harter & Pike (1983) Pictorial Scale of Perceived Competence and Social Acceptance for Young Children. In this scale, children are asked to select from two items with corresponding pictures which is most like them. Then, for each item, two possible questions are asked regarding the frequency with which they exhibit the behavior. This two-step process facilitates attention and simplifies the items for young children. A sample item from the Child-BUMP is as follows:

This boy cries a lot. This boy cries a little.

(If child selects first picture,
ask next two questions)

DO YOU:

always cry OR sometimes cry

(If child selects second picture,
ask next two questions)

DO YOU:

hardly ever cry OR never cry

Each final response is scored on a scale of one to four, with high scores suggestive of greater behavioral distress. A total score was obtained by summing the item scores. Fourteen of the items begin with the most negative response (4) and thirteen of the items depict African-American children. Male and female versions of

the scale are identical except for the sex of the child in the picture and as phrased in the question.

Procedure

Parents of eligible patients were informed of the study and participation was solicited by trained undergraduate research assistants supervised by the experimenter. Research assistants underwent a training program involving several steps. Assistants were first given a written description of general data collection procedures (See Appendix D) that they rehearsed prior to attending a 2-hour training session. During the training session, the assistants watched a videotape simulation of the experimenter administering the measures to two children, a 5-year-old male and an 11-year-old female. Following the videotape, the assistants role-played and discussed solving potential difficulties that could be encountered during data collection. After the training session, each assistant observed the experimenter administering the measures to at least one subject. Finally, the experimenter observed each research assistant giving the measures until the assistant demonstrated proficiency in the data collection procedures.

Families were administered the questionnaires in the hospital rooms the day following the child's

hospital admission. This delay allowed approximately 24 hours of behavior for both the parents and children to assess reaction to hospitalization (time since hospitalization ranged from 17 to 35 hours). Following the collection of demographic information, parents were instructed to complete the BUMP-R and PIC-D based on their child's behavior and the STAI on their own feelings since their child's hospitalization. As the parents completed their forms, the research assistant read aloud the Child-BUMP to all children and read the CDI to children ages 8-12. To reward cooperation, the child was allowed to select a small prize (e.g., sticker, toy car, puzzle book). After the data was collected from the parent and child, the nurse completed the BUMPR-Hospital form provided that the nurse had interacted with the child for a minimum of eight hours.

CHAPTER 3
RESULTS

Initially, this section focuses on the results obtained from the examination and analysis of the data collected from the 70 mothers, their children, and the nurses involved in the current study. Differences in demographic and illness-related variables were examined as well as the relationships among the test scores. Following this presentation, the information gathered from mothers in this study were compared to the data collected from the 81 mothers who participated in the pilot study to highlight significant differences between studies. Data from the mothers in the current study and the pilot study were then combined and analyzed to explore differences in demographic and illness-related variables on the BUMP-R for this larger, combined sample. In addition, a factor analysis of the BUMPR-Hospital ratings was performed for this combined sample.

Finally, analyses on a sample of fathers was also conducted. This sample consisted of 13 fathers from the current study and 11 fathers from the pilot study. A matched sample of mothers was obtained for comparison, in which eight of the fathers were compared

to their spouses who had also participated. For the remaining 16 fathers, mothers were selected for comparison based on the child's age and sex. Although this matched sample cannot address correspondence of ratings between mothers and fathers, the comparison addresses whether fathers rate distress in their children similar to mothers' ratings.

Analyses for Current Study

Descriptive Results & Statistics

Scores used for all analyses were the raw scores of the BUMP-R, Child-BUMP, and CDI and the standard T-Scores of the PIC-D and STAI. Inspection of skewness, kurtosis, and histograms indicated that all of the outcome measures were normally distributed. However, the length of current hospitalization, the number of prior hospitalizations, the duration of illness, and the number of hours the parent spent with the child were not normally distributed. Therefore, analyses utilizing these variables were based on Spearman rho coefficients. Moreover, given the number of correlations computed, the significance level was reduced to alpha=.01 for correlational analyses in order to control for Type I errors.

Descriptive statistics on each test variable are displayed in Table 1. No normative data is available

Table 1: Means and Standard Deviations of the Outcome Measures

	N	Mean (SD)
BUMPR-Hospital	70	27.2 (13.3)
BUMPR-Home	70	24.7 (11.2)
PIC-D	70	60.9 (15.0)
STAI-State	70	55.3 (12.2)
STAI-Trait	65	52.2 (10.4)
Child-BUMP	70	51.5 (8.4)
CDI	33	6.9 (5.1)
Nurse-BUMP	32	28.6 (18.8)

for the BUMP-R scores or for the new Child-BUMP. The sample mean on the PIC-D (M = 60.9, SD = 15.0) was one standard deviation above the normative sample mean, suggesting that mothers reported more depressive symptomatology in this population than in the general population. However, sample means on parent report of anxiety on both the STAI State scale (M = 55.3, SD = 12.2) and the STAI Trait scale (M = 52.2, SD = 10.4) were within normal limits. In addition, the current sample mean on the CDI (M = 6.9, SD = 5.1) is comparable to the mean reported for newly diagnosed diabetics (Kovacs, 1983) and is below the recommended cut-off for diagnosis of depression.

The new Child-BUMP measure appeared to function as designed, with the children readily grasping the two-step response process. Four-year-old children occasionally had difficulty with the measure if the parent had suggested that the child had comprehension problems. Repeating items was often helpful for children, particularly for those with more limited attention spans. Cronbach's coefficient alpha for the Child-BUMP was .76, suggesting fairly strong internal consistency. For the Nurse-BUMP, internal consistency was .93, indicating that the individual items are very strongly intercorrelated.

Analyses of Background Data

An examination of the demographic variables sex, age group, race, and family composition indicated no significant differences for the outcome measures (See Tables 2-6). No differences had been anticipated based on sex, race, or family composition. However, a marginal relationship was found between the CDI scores and family composition (See Table 5), with children of single parent homes reporting more depressive symptoms than children in two-parent homes (t = 1.99, p = .055). Contrary to the expectation that younger children (ages 4-8) would exhibit more distress than older children (ages 8-12), no differences between age groups were found on any of the outcome measures. Analyses also

Table 2: Demographic Differences for the BUMPR-Hospital

	N	Mean (SD)	t
Sex			
Males	29	28.3 (14.2)	.60
Females	41	26.4 (12.7)	
Age Group			
4-8	32	29.0 (15.5)	1.01
8-12	38	25.7 (11.0)	
Race			
White	46	28.1 (13.0)	.36
African-American	19	26.7 (14.9)	
Family Composition			
2-Parent	44	25.4 (12.8)	1.55
1-Parent	23	30.6 (13.5)	

Note: All t values are nonsignificant.

Table 3: Demographic Differences for the PIC-Depression

	N	Mean (SD)	t
Sex			
Males	29	62.1 (13.9)	.59
Females	41	60.0 (15.9)	
Age Group			
4-8	32	63.2 (18.2)	1.20
8-12	38	58.9 (11.6)	
Race			
White	46	60.8 (16.2)	.04
African-American	19	60.6 (13.2)	
Family Composition			
2-Parent	44	58.3 (12.8)	1.70
1-Parent	23	64.9 (18.7)	

Note: All t values are nonsignificant.

Table 4: Demographic Differences for the Child-BUMP

	N	Mean (SD)	t
Sex			
Males	29	52.0 (8.8)	.48
Females	41	51.0 (8.7)	
Age Group			
4-8	32	50.7 (10.2)	.65
8-12	38	52.0 (7.3)	
Race			
White	46	52.6 (8.6)	1.75
African-American	19	48.5 (8.5)	
Family Composition			
2-Parent	44	51.5 (8.3)	.05
1-Parent	23	51.4 (9.1)	

Note: All t values are nonsignificant.

Table 5: Demographic Differences for the CDI

	N	Mean (SD)	t
Sex			
Males	12	8.3 (5.0)	1.12
Females	21	6.2 (5.2)	
Race			
White	21	7.0 (5.2)	.28
African-American	10	6.4 (5.2)	
Family Composition			
2-Parent	21	5.4 (4.3)	1.99*
1-Parent	11	8.8 (5.1)	

Note: All t values are nonsignificant.

* p = .055

Table 6: Demographic Differences for the Nurse-BUMP

	N	Mean (SD)	t
Sex			
Males	17	31.3 (19.6)	.86
Females	15	25.5 (18.1)	
Age Group			
4-8	16	32.2 (17.8)	1.08
8-12	16	25.0 (19.6)	
Race			
White	26	26.8 (17.8)	1.23
African-American	5	38.2 (24.7)	
Family Composition			
2-Parent	19	25.5 (17.6)	.97
1-Parent	11	32.4 (20.5)	

Note: All t values are nonsignificant.

revealed no significant interaction between sex and age group or between sex and race.

An examination of the Spearman coefficients (See Table 7) indicated that the length of the current hospital visit and the number of prior hospitalizations were not associated with any of the measures of behavioral distress. Duration of illness was significantly negatively correlated with only parental state anxiety. Moreover, the relationship between the Child-BUMP scores and hours spent with the parent was positively correlated, a direction opposite of that predicted. Thus, the more time a parent spent with the child, the more distress the child reported on the pictorial measure. Although no other significant relationships with time spent with the parent emerged, a modest negative correlation with parental state anxiety was noted.

With regard to the six diagnostic groups, there were no significant differences on the BUMPR-Hospital scores ($F(53) = .87$, $p > .05$), on the CDI ($F(26) = 1.92$, $p > .05$), or on the Nurse-BUMP ($F(24) = 1.68$, $p > .05$). Only a marginal difference in diagnostic groups was found with the PIC-D scores ($F(53) = 2.11$, $p = .08$) and with the Child-BUMP scores ($F(53) = 2.13$, $p = .08$). Based on the classification of chronicity of illness, no significant differences appeared on any of the

Table 7: Spearman Correlations Between Illness-Related Variables and Outcome Measures

	Length of hospitalization r (n)	Number of Prior hospitalizations r (n)	Duration of illness r (n)	Number of Hours spent w/ parent r (n)
BUMPR-Hospital	.14 (70)	.04 (70)	.02 (64)	.16 (70)
BUMPR-Home	.13 (70)	.21 (70)	.14 (64)	.05 (70)
PIC-Depression	.04 (70)	.11 (70)	.00 (64)	.05 (70)
Child-BUMP	-.14 (70)	-.04 (70)	-.17 (64)	.29 (70)*
CDI	.00 (33)	.09 (33)	-.08 (31)	.01 (33)
Nurse-BUMP	-.15 (32)	-.15 (32)	-.29 (30)	.04 (32)
STAI-State	.20 (70)	-.15 (70)	-.30 (64)*	-.26 (70)[a]
STAI-Trait	.03 (65)	.09 (65)	-.17 (59)	-.13 (65)

* $p \leq .01$

[a] Because the significance level was reduced to .01, the marginal relationship was found at only $p \leq .05$.

outcome measures. In contrast to the pilot results and the hypothesis, there was no significant difference between the BUMPR-Hospital and BUMPR-Home score ($t(70) = 1.73$, $p > .05$).

Correlational Analyses

The correlation matrix in Table 8 indicates that, as expected, many of the outcome variables were intercorrelated. Consistent with the pilot study, the BUMPR-Hospital ratings were significantly positively correlated with the BUMPR-Home ratings. In addition, the BUMPR-Hospital scores were also significantly positively associated with the PIC-D, Child-BUMP, and CDI. However, the parent ratings of hospital distress on the BUMP-R was only marginally positively correlated with the Nurse-BUMP. The parent report of distress on the BUMPR-Home form was significantly positively correlated with the PIC-D and CDI. Moreover, the parent ratings on the PIC-D were significantly positively correlated with the CDI and parental trait anxiety. Parental trait and state anxiety were also positively correlated. With regard to demographic variables, SES was significantly positively correlated with the BUMPR-Home rating and the PIC-D scores.

The BUMPR-Hospital ratings and the Nurse-BUMP ratings were not significantly correlated with parent report of state or trait anxiety. In addition, the

Table 8: Correlations Among Outcome Measures and Demographic Variables

	BUMPR-Hosp r (n)	BUMPR-Home r (n)	PIC-D r (n)	Child-BUMP r (n)	CDI r (n)	Nurse-BUMP r (n)	STAI-State r (n)	STAI-Trait r (n)
BUMPR-Home	.53 (70)**							
PIC-D	.45 (70)**	.49 (70)**						
Child-BUMP	.36 (70)*	.10 (70)	.14 (70)					
CDI	.43 (33)*	.52 (33)**	.54 (33)**	.30 (33)				
Nurse-BUMP	.39 (32)a	.02 (32)	.04 (32)	.32 (32)	-.17 (14)			
STAI-State	.15 (70)	.07 (70)	.22 (70)	-.05 (70)	-.03 (33)	-.16 (32)		
STAI-Trait	.14 (65)	.21 (65)	.40 (65)**	-.02 (65)	.26 (31)	-.19 (29)	.64 (65)**	
AGE	-.15 (70)	.04 (70)	-.17 (70)	.04 (70)	.36 (33)a	-.23 (32)	-.03 (70)	-.08 (70)
GRADE	-.20 (70)	-.04 (70)	-.22 (70)	-.01 (70)	.30 (33)	-.25 (32)	-.02 (70)	-.07 (65)
SES	-.02 (70)	.31 (70)*	.36 (70)*	.16 (70)	.27 (33)	.29 (32)	.00 (70)	.23 (65)

* $p \leq .01$

** $p \leq .001$

a Because the significance level was reduced to .01, this marginal relationship was found at only $p \leq .05$.

parent report on the BUMPR-Home form was not significantly correlated with the Child-BUMP, Nurse-BUMP, or parental state or trait anxiety. Similarly, the PIC-D was not significantly related with the Child-BUMP, Nurse-BUMP, or parental state anxiety. The Child-BUMP was also not significantly associated with the CDI, Nurse-BUMP, or parental state or trait anxiety. The CDI was not significantly correlated with the Nurse-BUMP or parental state or trait anxiety. Moreover, contrary to the hypothesis that younger children would demonstrate more distress, age and grade were not significantly correlated with the outcome variables. This finding does not replicate the modest correlation of age and BUMPR-Hospital scores revealed in the pilot study. Lastly, SES was not significantly related to scores on the BUMPR-Hospital, Child-BUMP, CDI, Nurse-BUMP, or parental state or trait anxiety.

Analyses of Current Study and Pilot Study Combined

Comparison of Samples

Based on the results obtained from the pilot study, a difference had been anticipated in the current study between maternal ratings of distress at hospitalization and maternal ratings of distress at home. Moreover, the effects of age and gender were not observed in the current study compared to the pilot.

Given that these findings were not replicated in the present study, a comparison of the two samples of subjects was performed.

Distribution of race, family composition, SES, duration of illness, number of prior hospitalizations, and diagnostic grouping were comparable between samples. However, the pilot study was composed of predominantly males whereas the current study consisted of primarily females, a significant gender difference ($\underline{X}^2 = 5.46$, $\underline{p} = .01$). Furthermore, the children in the pilot study were significantly younger than the children in the current study ($\underline{F}(150) = 23.86$, $\underline{p} < .0001$).

Analyses of Combined Sample

The data obtained from maternal ratings on the BUMP-R from both samples were combined and analyzed, resulting in a more evenly distributed sample with respect to sex and age. This combined sample consisted of 151 mothers of 78 boys and 73 girls. Ages of the children ranged from 4 years, 1 month to 12 years, 11 months ($\underline{M}$ = 7 years, 6 months, $\underline{SD}$ = 2 years, 5 months).

With this combined sample, no significant sex differences were found in the mothers' ratings of hospital distress ($\underline{t}(149) = .80$, $\underline{p} > .05$) or in the ratings of home distress ($\underline{t}(149) = .70$, $\underline{p} > .05$). Moreover, children aged 4-8 years obtained ratings

comparable to the children aged 8-12 years on the BUMPR-Hospital ($t(149) = .91$, $p > .05$) and on the BUMPR-Home ($t(149) = 1.19$, $p > .05$). Age evidenced only a small relationship ($r = -.17$, $p < .05$) with ratings of behavioral distress in the hospital.

There were no differences in the BUMPR-Hospital scores ($F(117) = 1.55$, $p > .05$) or in the BUMPR-Home scores ($F(117) = 1.45$, $p > .05$) for the six diagnostic groups. The combined sample demonstrated no differences for chronicity of illness on the ratings of hospital distress ($t(128) = .78$, $p > .05$) or the ratings of home distress ($t(128) = .29$, $p > .05$). No significant relationship was found between the number of prior hospitalizations and the BUMPR-Hospital scores ($r = .06$, $p > .05$) or the BUMPR-Home scores ($r = .06$, $p > .05$). Similarly, duration of illness was unrelated to the BUMPR-Hospital ratings ($r = .06$, $p > .05$) or the BUMPR-Home ratings ($r = .05$, $p > .05$).

With this combined sample, maternal ratings of distress following hospitalization ($M = 27.0$, $SD = 13.1$) were significantly higher ($t(151) = 3.15$, $p < .01$) than ratings of distress at home ($M = 23.8$, $SD = 11.2$). Consistent with the results of both the pilot study and the current study, ratings of distress in the hospital were significantly correlated with ratings of distress in the home ($r = .50$, $p < .0001$).

Factor Analysis of BUMPR-Hospital

The BUMPR-Hospital scores obtained from the 151 mothers participating in the pilot study and the current study were then further analyzed in order to explore the psychometric characteristics of this measure. Because the BUMPR-Home items were designed to serve only as comparisons to the hospital items, the BUMPR-Home scores alone would not address hospitalization adjustment and thus were not further analyzed. Correlations between individual items on the BUMPR-Hospital rating and the total score are reported in Table 9. Cronbach's coefficient alpha assessing internal consistency of the total BUMPR-Hospital measure was .87, suggesting that individual items are strongly intercorrelated.

Factor analytic procedures were then performed on the BUMPR-Hospital scores. Principal factors were derived from the correlation matrix and the diagonal was replaced by communality estimates. For these communality estimates, Gorsuch (1983) maintains that, instead of unities for the diagnonals, a more accurate estimation of the communality for a given variable utilizes the squared multiple correlation with all other variables. To obtain the optimal factor solution, factor rotation was performed using the varimax orthogonal transformation, the promax oblique

Table 9: Item-Total Correlations for the BUMPR-Hospital

Item 1	.416	Item 15	.332
Item 2	.484	Item 16	.563
Item 3	.466	Item 17	.328
Item 4	.568	Item 18	.491
Item 5	.562	Item 19	.333
Item 6	.453	Item 20	.343
Item 7	.290	Item 21	.109
Item 8	.398	Item 22	.518
Item 9	.113	Item 23	.486
Item 10	.242	Item 24	.269
Item 11	.385	Item 25	.376
Item 12	.435	Item 26	.516
Item 13	.511	Item 27	.301
Item 14	.638	Item 28	.346

transformation, as well as the quartimax orthogonal transformation. Comparison of the rotation methods revealed that the promax oblique rotation yielded factor structures of substantial factor complexity and thus complicated interpretability. Thus, orthogonal solutions were preferred over the promax oblique solution which assumes intercorrelated factors. The quartimax orthogonal rotation was selected in favor of the varimax orthogonal rotation because Gorsuch (1983) advises that the varimax method is inappropriate when the measure has high internal consistency. The quartimax rotation assumes that a single general factor accounts for a substantial amount of the variance, which is implied with high internal consistency, whereas the varimax rotation does not assume one large factor.

The number of factors extracted was based on three criteria. As Gorsuch (1983) described, Guttman recommended examination of the characteristic roots (eigenvalues) for factor extraction. The number of eigenvalues greater than one estimates the number of factors. Based on this criterion, four factors were extracted (See Table 10), which accounted for 85% of the variance.

Table 10: Eigenvalues for the BUMPR-Hospital Factor Analysis

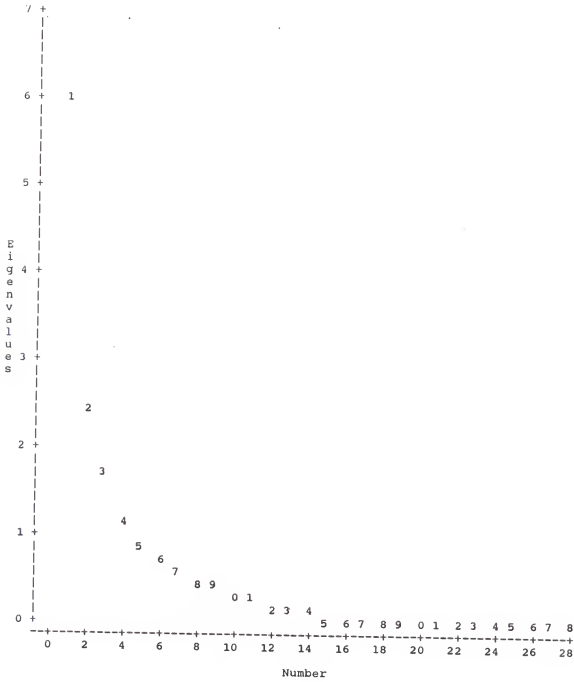
	Eigenvalues
Factor 1	6.07
Factor 2	2.50
Factor 3	1.78
Factor 4	1.09

The next criteria involved a plot of the eigenvalues, known as the scree test. Gorsuch (1983) describes that the predominant factors will account for a significant portion of the variance. Thus, the number of factors can be extracted where the plot of the eigenvalues levels off. The scree test shown in Figure 1 supports extraction of four factors.

Lastly, interpretability was used as the final criterion. Comparisons to three factor and five factor solutions confirmed that the quartimax four-factor solution retained the greatest number of items and resulted in the most parsimonious factor structure. Moreover, the quartimax four factor rotation yielded the most readily interpretable solution.

Item loadings of .40 were considered significant, which is more conservative than the traditional .30 cutoff and would result in stronger factors. Only Item

Figure 1: Scree Test of Eigenvalues for Factor Analysis of BUMP-R Hospital Ratings



14 (Is uncooperative) loaded on more than one factor, and two items did not have significant loadings on any of the four factors (Item 6: Refuses to speak; Item 7: Says he or she feels blue or depressed; See Table 11 for factor structure). Using the .40 item loading criterion, the first factor was extracted with 11 items, identified as Negativity/Agitation (See Table 12), with an internal consistency coefficient of .86. This first factor accounted for 41.2% of the variance. The second factor of nine items, labelled Amiability (See Table 13), encompassed sociability and agreeability. This factor attained an internal consistency coefficient of .79 and accounted for 26.3% of the variance. The third factor with four items was named Dysphoria (See Table 14), including vegetative symptoms of depression and emotional discomfort, with internal consistency at .68. The third factor accounted for 19.9% of the variance. The final factor was identified as Noncompliance (See Table 15), with four items and an internal consistency of .68. The last factor accounted for 12.5% of the variance.

Analysis of Fathers for Combined Sample

To examine similarities between parental raters, fathers were compared to a matched sample of mothers. Results indicated that fathers' ratings (M = 30.7, SD = 15.6) were similar to mothers' ratings (M = 28.3, SD =

Table 11: Factor Structure of the BUMPR-Hospital

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
Item 1	.63589	-.04183	-.00338	.02754
Item 2	.45435	.12336	.36104	.00857
Item 3	.59320	.02689	.18392	-.04462
Item 4	.65127	.13778	.22307	-.05709
Item 5	.65284	.12495	.17103	-.02268
Item 6	.30260	.37821	.25504	-.06537
Item 7	.18094	.18013	.28743	.01944
Item 8	.22155	.17271	.10444	.66649
Item 9	-.06193	-.00589	.43279	.14313
Item 10	.32859	-.03857	-.10527	.45162
Item 11	.19292	.08428	.67505	-.02277
Item 12	.16359	.22701	.70590	-.03168
Item 13	.53006	.07606	.30855	.02363
Item 14	.57713	.26186	.08055	.39853
Item 15	.51382	.06229	-.02597	-.14439
Item 16	.70806	.08321	-.01942	.19862
Item 17	.12274	.07588	.32630	.48533
Item 18	.72155	.03593	-.16548	.20505
Item 19	.55057	-.10472	-.12761	.29440
Item 20	.21628	.10644	.45006	.00852
Item 21	-.14432	.39522	.02132	.13843
Item 22	.25396	.67377	.14469	-.12223
Item 23	.28992	.64513	-.13552	.15905
Item 24	-.03104	.53951	.20288	-.09263
Item 25	.04713	.56132	.30167	-.11305
Item 26	.24431	.63897	.12487	.01719
Item 27	.03600	.54897	.01670	.08005
Item 28	.23332	.48658	-.27860	.27999

Table 12: Item Loadings for Factor One--Negativity/ Agitation

	Item	Loading
Item 18	Demanding	(.72)
Item 16	Stubborn, negativistic	(.71)
Item 4	Becomes upset easily	(.65)
Item 5	Is irritable or grouchy	(.65)
Item 1	Is impatient	(.64)
Item 3	Gets angry	(.59)
Item 14	Is uncooperative	(.58)
Item 19	Manipulative	(.55)
Item 13	Clinging, needs lots of reassurance	(.53)
Item 15	Complains	(.51)
Item 2	Cries	(.45)

Internal Consistency Factor 1: Coefficient alpha = .86

Table 13: Item Loadings for Factor Two--Amiability

	Item	Loading
Item 22	Tries to be friendly	(.67)
Item 23	Accepts advice or instructions easily	(.64)
Item 26	Pleasant to be with	(.64)
Item 25	Laughs or smiles at funny comments or events	(.56)
Item 27	Shows interest in recovery (takes initiative)	(.55)
Item 24	Starts conversation	(.54)
Item 28	Does what he or she is told	(.49)
Item 21	Able to ask for help	(.40)

Internal Consistency Factor 2: Coefficient alpha = .79

Table 14: Item Loadings for Factor Three--Dysphoria

	Item	Loading
Item 12	Looks depressed or sad	(.71)
Item 11	Looks worried, tense	(.68)
Item 20	Has sleep problems	(.45)
Item 9	Sleeps unless directed into activity	(.43)

Internal Consistency Factor 3: Coefficient alpha = .68

Table 15: Item Loadings for Factor Four--Noncompliance

	Item	Loading
Item 8	Has to be reminded what to do	(.67)
Item 17	Is incredibly passive	(.49)
Item 10	Has to be told to follow hospital routine	(.45)
Item 14	Is uncooperative	(.40)

Internal Consistency Factor 4: Coefficient alpha = .68

15.6) for the BUMPR-Hospital scores ($t(46) = .54$, $p > .05$). Ratings on the BUMPR-Home showed a similar pattern ($t(46) = .57$, $p > .05$), with fathers ($M = 25.0$, $SD = 12.0$) obtaining scores comparable to mothers ($M = 23.0$, $SD = 11.7$).

For the 24 fathers involved in the pilot study and the current study, no significant sex differences for the children emerged on the BUMPR-Hospital rating ($t(22) = .80$, $p > .05$) or for the BUMPR-Home rating ($t(22) = .34$, $p > .05$). In addition, no age group differences were found between 4-8 year old children and 8-12 year old children for the BUMPR-Hospital scores ($t(22) = 1.03$, $p > .05$) or for the BUMPR-Home scores ($t(22) = .43$, $p > .05$). Age was also not significantly correlated with the BUMPR-Hospital ratings ($r = -.25$, $p > .05$) or with the BUMPR-Home ratings ($r = -.11$, $p > .05$). Previous number of hospitalizations was not associated with the BUMPR-Hospital scores ($r = .10$, $p > .05$) or with the BUMPR-Home scores ($r = .36$, $p > .05$). However, duration of illness was correlated with the BUMPR-Hospital ratings ($r = -.49$, $p < .05$) but not with the BUMPR-Home ratings ($r = .03$, $p > .05$).

Similar to the earlier analyses of mothers, fathers also rated hospital distress ($M = 30.7$, $SD = 15.6$) as significantly higher ($t(22) = 2.38$, $p < .05$)

than home distress (M = 25.0, SD = 12.0). Moreover, the hospital distress score was also signicantly correlated with the home distress score (r = .66, p < .001).

CHAPTER 4
DISCUSSION

Background Variables Affecting Distress

The first purpose of the present study was to examine variables influencing depression and adjustment in hospitalized children aged 4-12. The findings indicated no significant gender differences on any of the distress or depression measures. This result is consistent with the bulk of the literature (e.g., Jay et al., 1983; Saylor et al., 1987). However, it did not support the trend observed in the pilot study for girls to obtain higher BUMPR-Hospital scores than boys. A comparison of the pilot sample with the current sample revealed significantly more females in the latter sample. When the two samples were combined, no significant sex differences were found on the BUMPR-Hospital form, for mothers or fathers. In fact, the two studies cited earlier that suggested that girls exhibit more distress (Katz et al., 1980; Melamed & Siegel, 1975) consisted of samples with proportionately more boys. Consequently, when the sample is more evenly represented by males and females, any sex differences in depressive symptoms for pediatric populations may disappear.

Contrary to the hypothesis, younger children did not obtain higher distress scores in the current study. Many previous studies have found an inverse relationship between age and depressive symptoms in pediatric populations (e.g., Jay et al., 1983; Katz et al., 1980; Saylor et al., 1987). Moreover, age was found to be negatively correlated with BUMPR-Hospital scores in the pilot study. Thus, the current study did not confirm the negative correlation between age and distress found in the pilot study. Again, a comparison revealed that children in the pilot study were significantly younger than those in the current sample. With both samples combined, a low but significant negative correlation was found between age and mothers' BUMPR-Hospital ratings. The magnitude of this age correlation is comparable to that found in the study that introduced the BUMP-R (Saylor et al., 1987). Thus, younger children may show more distress upon hospitalization, although the relationship does not appear strong.

As anticipated, no significant differences were found for race on any of the outcome measures. The influence of ethnicity on distress in pediatric populations has not been studied. However, the absence of racial differences in distress found in the current study is consistent with research in depression for the

general child population (e.g., Angold, 1988; Kaslow & Racusin, 1990) as well as with the pilot study results.

With regard to family composition, only the CDI showed a small, nonsignificant difference, with children of single-parent households obtaining somewhat higher scores than children of two-parent households. This suggests that there may be a tendency for children to display more depressive symptoms because of the stressors associated with single-parent homes. However, given that this group difference was not significant and that family composition differences have not been reported in the general or pediatric population with regard to depressive symptoms, this finding may be spurious. Overall, the results confirmed the pilot study findings and supported the hypothesis that family composition does not significantly affect behavioral distress in pediatric populations.

No relationship between socioeconomic status and distress was expected. However, the PIC-D and the BUMPR-Home ratings were significantly positively correlated with SES index. Thus, mothers in lower socioeconomic levels reported more symptoms of depression and distress in their children, possibly reflecting the degree of stress associated with greater financial hardship. This finding is consistent with

the relationship found in a dental setting (Wright & Alpern, 1971). Given that the remaining measures used in this study that target distress in pediatric populations did not manifest this relationship, perhaps SES is not as influential in this group of children.

Maternal anxiety was predicted to be positively correlated with child's distress. The findings revealed that maternal reports of state and trait anxiety were generally not related to the child's behavioral upset. The only relationship that emerged involved the PIC-D and maternal trait anxiety in that mothers' reports of greater anxiety during the child's hospital stay was associated with their reports of more depressive symptoms in their children. This result may be attributed to source bias because anxious mothers may expect their children to display adjustment difficulties upon hospitalization. The absence of strong support for the relationship between children's distress and maternal anxiety contrasts with several previous studies (e.g., Blotcky et al., 1985; Jay et al., 1983; Walker & Greene, 1989). Perhaps maternal anxiety was not strongly related to child distress in the present study because those previous studies involved specific diagnostic groups (e.g., cancer, recurrent abdominal pain). When pediatric patients with diverse diagnoses are involved, parental anxiety

may not be significantly associated with the child's behavioral upset or depression.

With regard to the amount of parent contact during hospitalization, a negative correlation with child distress had been anticipated. However, only the Child-BUMP self-report scale was positively correlated with the number of hours the parent spent with the child. In other words, the more contact the child had with the parent upon hospitalization, the more behavioral upset the child reported. This finding supports studies relating maternal presence to increased negative behavior (e.g., Shaw & Routh, 1982). Children may have interpreted high contact with a parent during hospitalization as indicative of cause for concern, or the children may have felt more comfortable expressing their distress in their parents' presence. Alternatively, those parents with more distressed children may be more likely to spend more time at their child's bedside in an attempt to alleviate their distress.

In contrast, the remaining measures of child distress were not associated with the amount of parent contact, which supports earlier findings on hospitalized children (Saylor et al., 1987). An interesting and unexpected low positive correlation between amount of parent contact and maternal state

anxiety emerged. Therefore, mothers reported greater anxiety the more time they spent with their child. This may reflect parent fatigue or it may suggest that concern for their child's illness may influence both amount of contact and anxiety ratings.

Overall, this pattern of results regarding parent contact does not support the Peterson et al. (1985) position promoting parental contact in order to avoid difficulties following separation upon hospitalization. One salient limitation in drawing conclusions about parent contact from the current study stems from subject participation being contingent upon parental presence. Obviously, those patients who spent little time with their hospitalized child were particularly likely to be unavailable for study participation. Thus, distress in children who could not participate in this study may indeed be greater with limited parent contact. In addition, parents themselves reported the number of hours spent with their child and they may have exaggerated the amount of time. Indeed, there was minimal statistical variability in reported parent contact, and, given the skewed distribution and the possible influence of outliers, results regarding amount of time the parent spent with the child should be interpreted cautiously.

A number of illness-related variables were also examined. Diagnostic group differences in depression and behavioral distress were not found in the current study. For this relatively understudied aspect of adjustment, categorization by type of illness and by chronicity of illness failed to support significant group differences, contrary to expectation. These findings are comparable to those in the pilot study and in a study of cancer patients (Jay et al., 1983). However, given the wide variety of diagnoses obtained in the current sample, categorization of illness was difficult and group sizes were possibly too small for adequate comparison. An ideal study would compare several clearly definable illness groups which might then yield differences in behavioral upset and depression.

The number of prior hospitalizations was expected to be positively associated with distress, although the results did not confirm this hypothesis. Previous medical experience was not correlated with behavioral distress in the current study or in the pilot study. Results from previous research have been mixed, with some investigations suggesting greater distress for frequently hospitalized patients (e.g., Saylor et al., 1987) and other investigations suggesting habituation and decreased upset with more hospital visits (e.g.,

Jay et al., 1983). The current findings suggest that previous medical history may be unrelated to the child's reaction to hospitalization. The current study included children with a wide variety of diagnoses and medical histories whereas the Jay et al. (1983) study involved a sample of children with cancer. Perhaps the quality of previous medical experience (i.e., negative or positive perceptions) is more influential in a child's adjustment to hospitalization than frequency of prior hospitalizations.

Contrary to the hypothesis, duration of illness and length of hospital stay were not positively correlated with the child's emotional distress. Although previous research has not studied these variables closely, children with chronic illness and longer hospitalizations were expected to obtain higher scores on measures of depression and behavioral upset. However, both the current study and pilot study did not find these relationships. One interesting negative association between maternal state anxiety and duration of illness emerged. The concept of habituation may account for this relationship, with mothers reporting less anxiety as they become accustomed to the chronic nature of their child's illness. With regard to length of hospitalization, most children were hospitalized for short periods and greater variability in length of

hospital stay may have revealed differences in adjustment.

Evaluation of the BUMP-R

The second purpose of this study was the investigation of measures of distress particularly suitable for pediatric populations. The Behavioral Upset in Medical Patients--Revised designed by Saylor and her colleagues (1987) appears to be a promising parent report measure. The current study did not reveal significant differences between ratings of hospital and home distress, which did not support the results obtained from the pilot study. With the data from both the pilot and current study combined, a more evenly distributed sample emerged. Maternal hospital ratings in this combined sample were significantly higher than home ratings. Moreover, fathers also reported more behavioral upset in the hospital as compared to the home. Therefore, the overall findings suggest that hospitalization may precipitate emotional distress.

The current study confirmed the pilot study's strong positive correlation between the BUMPR-Hospital scores and the BUMPR-Home scores. When the two samples were combined, this relationship remained strong for both mothers' and fathers' ratings. These results

corroborate the correlation found by Saylor et al. (1987). These authors suggested that premorbid psychological functioning, as measured by the BUMPR-Home, predicts a child's adjustment to the stress of hospitalization. Consequently, children reportedly experiencing greater emotional distress at home may be more susceptible to adjustment difficulties upon hospitalization.

The BUMPR-Hospital and BUMPR-Home scores were also positively correlated with the other parent report measure, the PIC-D. This indicated that the BUMP-R taps into the construct of depression similarly to an instrument traditionally used for healthy children. Likewise, the BUMPR-Hospital and BUMPR-Home ratings were positively correlated with the children's self-reported depression on the CDI. Given that these correlations with measures commonly used in the general child population are only moderate, the BUMP-R appears to be assessing some unique aspect of child behavior. Indeed, that the BUMPR-Home ratings correlated more strongly with the PIC-D and CDI than does the BUMPR-Hospital would suggest that the latter is more sensitive to hospitalization behavior.

The BUMPR-Hospital rating was significantly positively correlated with the Child-BUMP but only marginally positively correlated with the Nurse-BUMP.

On the other hand, the BUMPR-Home was not correlated with either the Child-BUMP or Nurse-BUMP. This further supports that the BUMPR-Hospital specifically measures adjustment in a hospital setting, not depressive symptoms in general.

Conclusions regarding correspondence between mothers and nurses are limited given the small sample of 32 nurses available to complete the BUMPR-Hospital. However, from the marginal relationship found between mothers' and nurses' ratings and the strong internal consistency of the Nurse-BUMP, nurses may be able to reliably assess behavioral distress in a hospitalized child after as little as eight hours of contact.

Fathers were seldom available to participate in the study or they indicated that they preferred the mother complete the measures. Thus, this study did not address interrater agreement between fathers and mothers for the BUMPR-Hospital form. However, the sample of fathers (comprised of fathers participating conjointly with mothers and fathers participating alone) was compared to a sample of mothers matched for the child's age and sex. This comparison indicated that fathers provided BUMP-R ratings comparable to mothers. Therefore, fathers appear to be as reliable raters on the BUMP-R as mothers.

For the combined samples of the pilot and current studies, Cronbach's coefficient alpha for the BUMPR-Hospital rating was .87. Given this strong internal consistency, the most suitable and parsimonious solution in the factor analysis of the BUMPR-Hospital scores was based on the quartimax rotation. Four factors emerged, with the largest number of items representing Negativity/Agitation. The second factor was labelled as Amiability, the third factor as Dysphoria, and the fourth factor as Noncompliance. This factor structure appears to adequately capture those dimensions involved in adjustment to hospitalization.

Evaluation of Child-BUMP

A self-report pictorial measure, the Child-BUMP, was designed for the current study to tap emotional distress in hospitalized children as young as four years old. Based on a two-step selection process, children identify pictures reflecting their level of distress since hospitalization. Most children appeared to understand the instrument, particularly with repetition of items. Cronbach's coefficient alpha for the Child-BUMP was computed as .76, which indicates moderately strong internal consistency.

The Child-BUMP was moderately significantly correlated with the parent report on the BUMPR-Hospital form. Thus, children and mothers demonstrated some agreement regarding the child's emotional distress, although they appear to hold different perspectives given that the correlation was moderate. As would be expected, the Child-BUMP, which assesses behavioral upset in the hospital, did not correlate significantly with the mothers' BUMPR-Home ratings, giving some initial indication of discriminative validity of the measure. In addition, the Child-BUMP was not associated with the parent's report on the PIC-D, possibly because the PIC-D was not intended for use in medical populations. Similarly, the CDI was not significantly correlated with the Child-BUMP. This may be attributed to the physical symptoms and school-related items appearing on the CDI which would not be appropriate for hospitalized, physically-ill children. Finally, the Child-BUMP was not significantly correlated with the Nurse-BUMP, which suggests low agreement between these two sources.

Implications

The present study ventured into several relatively unexplored areas in pediatric psychology, including perspectives from various sources, incorporating self-

reports from preschool children, utilizing a heterogeneous sample of children, and examining a comprehensive array of potential risk factors. The findings from the current study highlight the need for continued research to determine which children are at risk for developing adjustment difficulties upon hospitalization. Most of the background variables examined did not clarify which children are most likely to exhibit distress in the hospital.

Of the variables investigated, maternal anxiety, parent contact, diagnosis, and previous medical experience specifically require further examination. Alternative means of assessing maternal anxiety (e.g., clinician-administered interview) may help resolve confusion regarding the influence of mothers' emotional reactions on child adjustment. With regard to parent contact, health personnel could log the amount of time the parent spends with the child to ensure accuracy of reporting. As suggested earlier, future studies could determine specific diagnostic groups to examine a priori and evaluate distress in these groups in order to obtain sufficient group sizes. In addition, investigation of previous medical experience should include the child's subjective evaluation of prior encounters with medical personnel.

Premorbid psychological functioning, as measured by the BUMPR-Home rating, was strongly related to distress upon hospitalization. Therefore, a child's emotional and behavioral difficulties outside the hospital is predictive of emotional upset upon hospitalization. Future research should assess children prior to hospitalization (e.g., for scheduled procedures) to determine which children are likely to experience adjustment difficulties. For children entering the hospital for unscheduled procedures, a brief assessment battery shortly after hospital admission could be investigated to facilitate identification of children who will likely experience difficulties in the hospital.

One intriguing direction for pediatric psychology research moves toward evaluating the influence of the context of health care delivery on adjustment. For instance, studies should more closely examine the impact of a family's access to health care. Parental experience of the availability of health care for their children may affect their attitudes towards medical intervention. Many families may also encounter poor continuity and follow-up by health care providers. Availability may also affect a family's health care orientation, i.e., their attitude towards health care and medical professionals. Belief systems also likely

influence the perceived acceptability of medical intervention. In addition, social support systems may contribute to health care orientation as well as provide assistance to parent and child during health care crises. These variables may affect the parent and child's perspective and adjustment when encountering a given hospitalization.

With regard to assessment of pediatric populations, overall, the BUMP-R appears to be a useful instrument in the assessment of emotional distress in hospitalized children, with concurrent validity, high internal consistency, and appropriateness for various raters. Further investigation of the BUMP-R should evaluate the consistency of distress ratings over time as well as comparing scores of hospitalized children with outpatient pediatric samples in order to ascertain the specific effect of hospitalization. The current multimethod investigation utilized self-report, parent-report, and nurse-report. Correspondence between raters should be further explored, focusing on interrater reliabilities between mothers, fathers, children, and health personnel (e.g., nurses, doctors).

In addition, the Child-BUMP warrants further investigation regarding its utility for pre-literate hospitalized children. Items should be further examined to ensure the suitability for these young

children. Both child and parent report of behavioral distress could also be compared to clinician ratings of depression and adjustment difficulties to further assess the validity of the BUMP-R and Child-BUMP. The BUMP-R and Child-BUMP appear to be promising instruments for assessing preschool children, an understudied age group because of the unique challenges of research with very young children.

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APPENDIX A
BEHAVIORAL UPSET IN MEDICAL PATIENTS REVISED (BUMP-R)

PARENT RATING FORM

Subject #:_____ DATE: _____

Your relationship to child:_____

Side One

PLEASE RATE YOUR CHILD'S BEHAVIOR AS YOU HAVE SEEN IT SINCE YOUR ARRIVAL AT THE HOSPITAL. MARK ONE BOX PER QUESTION TO INDICATE YOUR CHOICE.

	Never	Sometimes	Often	Usually	Always
1. Is impatient	[]	[]	[]	[]	[]
2. Cries	[]	[]	[]	[]	[]
3. Gets angry	[]	[]	[]	[]	[]
4. Becomes upset easily	[]	[]	[]	[]	[]
5. Is irritable or grouchy	[]	[]	[]	[]	[]
6. Refuses to speak	[]	[]	[]	[]	[]
7. Says he or she feels blue or depressed	[]	[]	[]	[]	[]
8. Has to be reminded what to do	[]	[]	[]	[]	[]
9. Sleeps unless directed into activity	[]	[]	[]	[]	[]
10. Has to be told to follow hospital routine	[]	[]	[]	[]	[]
11. Looks worried, tense	[]	[]	[]	[]	[]
12. Looks depressed or sad	[]	[]	[]	[]	[]
13. Clinging, needs lots of reassurance	[]	[]	[]	[]	[]
14. Is uncooperative	[]	[]	[]	[]	[]
15. Complains	[]	[]	[]	[]	[]
16. Stubborn, negativistic	[]	[]	[]	[]	[]
17. Is incredibly passive	[]	[]	[]	[]	[]
18. Demanding	[]	[]	[]	[]	[]
19. Manipulative	[]	[]	[]	[]	[]
20. Has sleep problems	[]	[]	[]	[]	[]
21. Able to ask for help	[]	[]	[]	[]	[]
22. Tries to be friendly	[]	[]	[]	[]	[]
23. Accepts advice or instructions easily	[]	[]	[]	[]	[]
24. Starts conversations	[]	[]	[]	[]	[]
25. Laughs or smiles at funny comments or events.	[]	[]	[]	[]	[]
26. Pleasant to be with	[]	[]	[]	[]	[]
27. Shows interest in recovery (takes initiative)	[]	[]	[]	[]	[]
28. Does what he or she is told	[]	[]	[]	[]	[]

Side Two

PLEASE RATE YOUR CHILD'S BEHAVIOR AS YOU HAVE SEEN IT AT HOME, BEFORE HE OR SHE WAS HOSPITALIZED. MARK ONE BOX PER QUESTION TO INDICATE YOUR CHOICE.

	Never	Sometimes	Often	Usually	Always
1. Is impatient	[]	[]	[]	[]	[]
2. Cries	[]	[]	[]	[]	[]
3. Gets angry	[]	[]	[]	[]	[]
4. Becomes upset easily	[]	[]	[]	[]	[]
5. Is irritable or grouchy	[]	[]	[]	[]	[]
6. Refuses to speak	[]	[]	[]	[]	[]
7. Says he or she feels blue or depressed	[]	[]	[]	[]	[]
8. Has to be reminded what to do	[]	[]	[]	[]	[]
9. Sleeps unless directed into activity	[]	[]	[]	[]	[]
10. Has to be told to follow hospital routine	[]	[]	[]	[]	[]
11. Looks worried, tense	[]	[]	[]	[]	[]
12. Looks depressed or sad	[]	[]	[]	[]	[]
13. Clinging, needs lots of reassurance	[]	[]	[]	[]	[]
14. Is uncooperative	[]	[]	[]	[]	[]
15. Complains	[]	[]	[]	[]	[]
16. Stubborn, negativistic	[]	[]	[]	[]	[]
17. Is incredibly passive	[]	[]	[]	[]	[]
18. Demanding	[]	[]	[]	[]	[]
19. Manipulative	[]	[]	[]	[]	[]
20. Has sleep problems	[]	[]	[]	[]	[]
21. Able to ask for help	[]	[]	[]	[]	[]
22. Tries to be friendly	[]	[]	[]	[]	[]
23. Accepts advice or instructions easily	[]	[]	[]	[]	[]
24. Starts conversations	[]	[]	[]	[]	[]
25. Laughs or smiles at funny comments or events.	[]	[]	[]	[]	[]
26. Pleasant to be with	[]	[]	[]	[]	[]
27. Shows interest in recovery (takes initiative)	[]	[]	[]	[]	[]
28. Does what he or she is told	[]	[]	[]	[]	[]

APPENDIX B
DEMOGRAPHIC INFORMATION SHEET

ID# _____ DATE _____

RESPONDENT _____MOTHER _____FATHER

SEX _____MALE _____FEMALE

DOB _____

RACE ___WHITE ___BLACK ___HISPANIC ___OTHER

GRADE ___NONE ___PRESCHOOL ___KIND ____GRADE

FAMILY COMPOSITION ___MOTHER & FATHER

___MOTHER ONLY

___FATHER ONLY

___MOTHER & STEPFATHER

___FATHER & STEPMOTHER

___RELATIVES

___OTHER

MOTHER'S OCCUPATION _____

MOTHER'S EDUCATIONAL LEVEL _____ (YEARS)

FATHER'S OCCUPATION _____

FATHER'S EDUCATIONAL LEVEL _____ (YEARS)

DIAGNOSIS _____

DATE OF DIAGNOSIS ____/____/____

NUMBER OF PRIOR HOSPITALIZATIONS (APPROX) _____

ESTIMATED NUMBER HOURS/DAY SPENT WITH CHILD _____

APPENDIX C
BEHAVIORAL UPSET IN MEDICAL PATIENTS--CHILD SELF-REPORT VERSION (CHILD-BUMP)

ITEM 1

This girl doesn't like waiting.

DO YOU:

never like waiting	OR	sometimes not like waiting
4		3

This girl doesn't mind waiting.

DO YOU:

hardly ever mind waiting	OR	never mind waiting
2		1

ITEM 2

This girl cries a little.

DO YOU:

never cry OR hardly ever cry

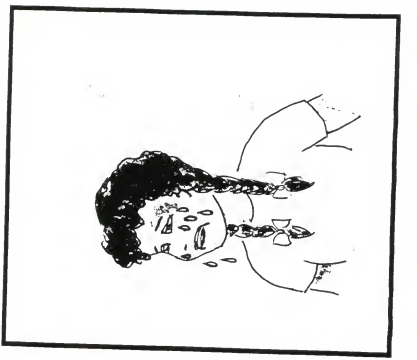
1 2

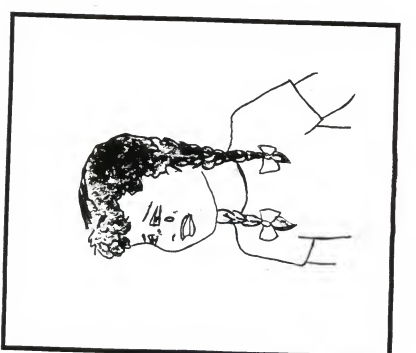
This girl cries a lot.

DO YOU:

sometimes cry OR always cry

3 4





ITEM 3

This girl gets mad a lot.

ARE YOU:

always mad OR sometimes mad

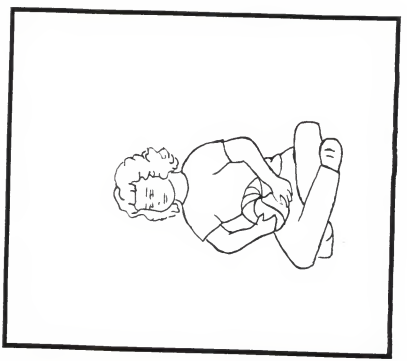
4 3

This girl doesn't get mad a lot.

ARE YOU:

hardly ever mad OR never mad

2 1



ITEM 4

This girl usually isn't grouchy.

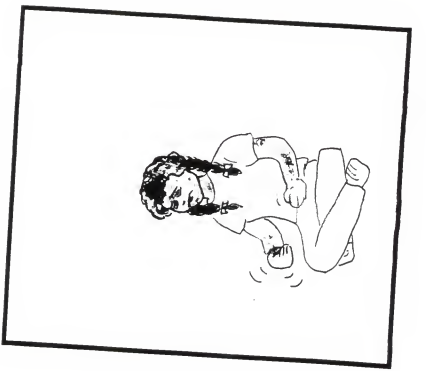
ARE YOU:

never grouchy	OR	hardly ever grouchy
1		2

This girl is usually grouchy.

ARE YOU:

sometimes grouchy	OR	always grouchy
3		4



ITEM 5

This girl won't talk.

DO YOU:

not talk at all	OR	only sometimes not talk
4		3

This girl doesn't mind talking.

DO YOU:

usually not mind talking	OR	never mind talking
2		1

ITEM 6

This girl doesn't say she's sad.

DO YOU:

never say you're sad	OR	hardly ever say you're sad
1		2

This girl says she's sad.

DO YOU:

sometimes say you're sad	OR	always say you're sad
3		4

I'M SAD

ITEM 7

This girl has to be told many times what to do.

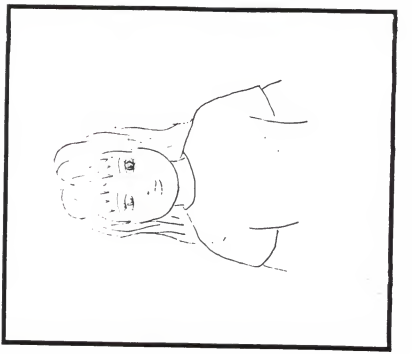
DO YOU:

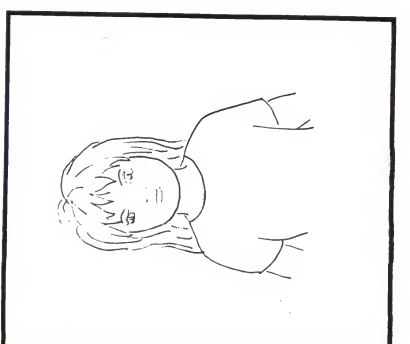
always have to be told many times what to do	OR	sometimes have to be told many times what to do
4		3

This girl doesn't have to be told many times what to do.

DO YOU:

hardly ever have to be told many times what to do	OR	never have to be told many times what to do
2		1





ITEM 8

This girl would rather do other things.

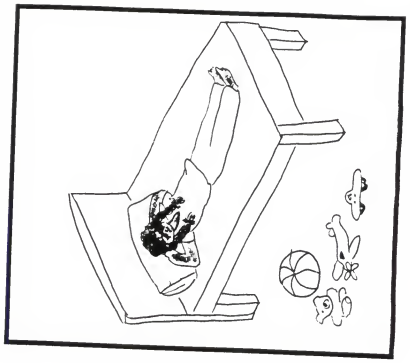
WOULD YOU:

always rather do other things	OR	sometimes rather do other things
1		2

This girl would rather sleep than do other things.

WOULD YOU:

sometimes rather sleep than do other things	OR	always rather sleep than do other things
3		4



ITEM 9

This girl has to be told to follow hospital rules.

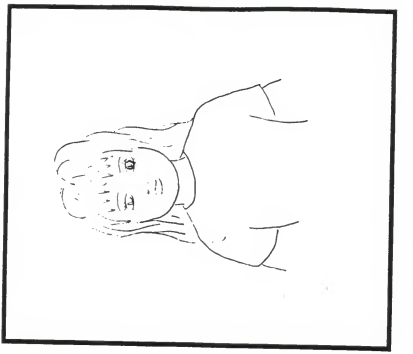
DO YOU:

always have to be told to follow hospital rules	OR	sometimes have to be told to follow hospital rules
4		3

This girl doesn't have to be told to follow hospital rules.

DO YOU:

hardly ever have to be told to follow hospital rules	OR	never have to be told to follow hospital rules
2		1



ITEM 10

This girl doesn't look worried.

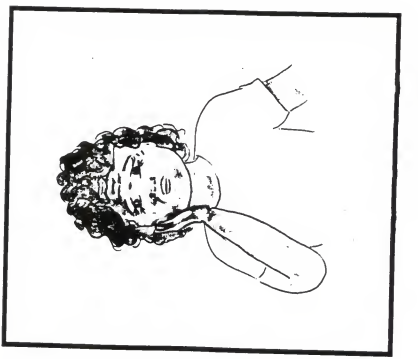
DO YOU:

never look worried	OR	hardly ever look worried
1		2

This girl usually looks kind of worried.

DO YOU:

sometimes look worried	OR	always look worried
3		4



ITEM 11

This girl usually looks kind of sad.

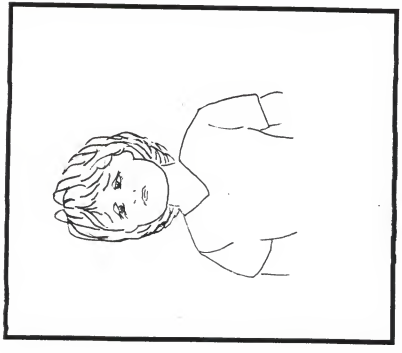
DO YOU:

always look sad	OR	sometimes look sad
4		3

This girl doesn't usually look sad.

DO YOU:

hardly ever look sad	OR	never look sad
2		1



ITEM 12

This girl usually does what others want.

DO YOU:

always do what others want	OR	sometimes do what others want
1		2

This girl doesn't do what others want.

DO YOU:

hardly ever do what others want	OR	never do what others want
3		4

OKAY

NO!

ITEM 13

This girl needs her parents to make her feel better.

DO YOU:

always need your parents to make you feel better	OR	sometimes need your parents to make you feel better
4		3

This girl doesn't need her parents to make her feel better.

DO YOU:

hardly ever need your parents to make you feel better	OR	never need your parents to make you feel better
2		1

ITEM 14

This girl doesn't talk about things that bug her.

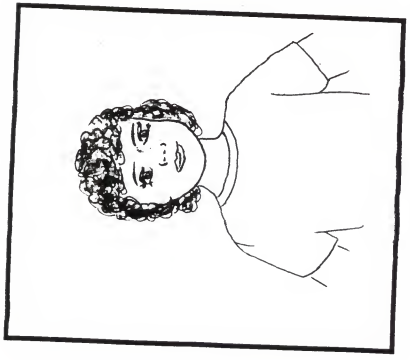
DO YOU:

never talk about things that bug you	OR	hardly ever talk about things that bug you
1		2

This girl talks about a lot of things that bug her.

DO YOU:

sometimes talk about things that bug you	OR	always talk about things that bug you
3		4



ITEM 15

This girl has to have her own way.

DO YOU:

always have to have your own way	OR	sometimes have to have your own way
4		3

This girl doesn't have to have her own way.

DO YOU:

hardly ever have to have your own way	OR	never have to have your own way
2		1

ITEM 16

This girl does a lot of things.

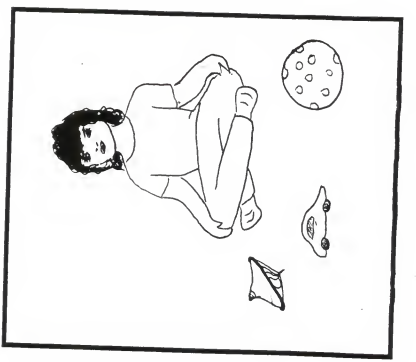
DO YOU:

always do a lot of things	OR	sometimes do a lot of things
1		2

This girl doesn't do a lot of things.

DO YOU:

hardly ever do a lot of things	OR	never do a lot of things
3		4



ITEM 17

This girl tricks people to get what she wants.

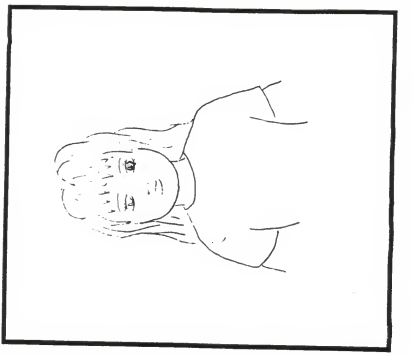
DO YOU:

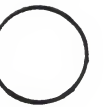
always trick people	OR	sometimes trick people
4		3

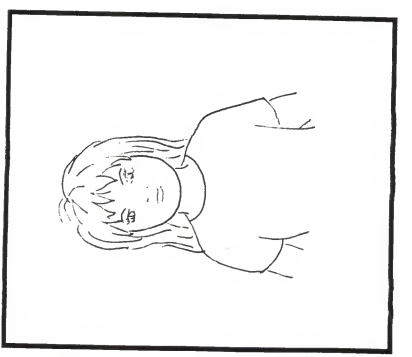
This girl doesn't trick people to get what she wants.

DO YOU:

hardly ever trick people	OR	never trick people
2		1







ITEM 18

This girl doesn't want a lot of things.

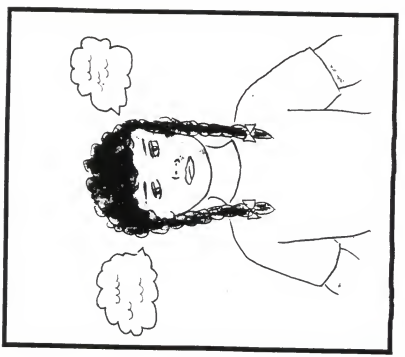
DO YOU:

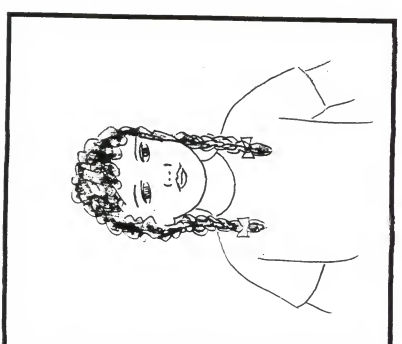
never want a lot of things	OR	hardly ever want a lot of things
1		2

This girl wants a lot of things.

DO YOU:

sometimes want a lot of things	OR	never want a lot of things
3		4





ITEM 19

This girl doesn't sleep well.

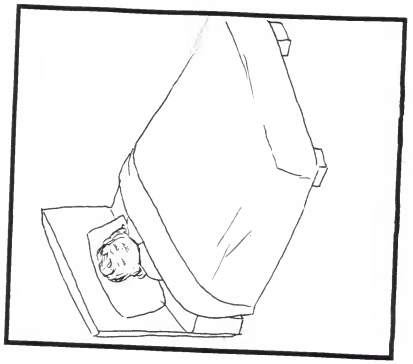
DO YOU:

never sleep well	OR	hardly ever sleep well
4		3

This girl sleeps well.

DO YOU:

usually sleep well	OR	always sleep well
2		1



ITEM 20

This girl can ask others for help.

DO YOU:

always ask others for help	OR	sometimes ask others for help
1		2

This girl can't ask others for help.

DO YOU:

hardly ever ask others for help	OR	never ask others for help
3		4

ITEM 21

This girl doesn't try to make friends.

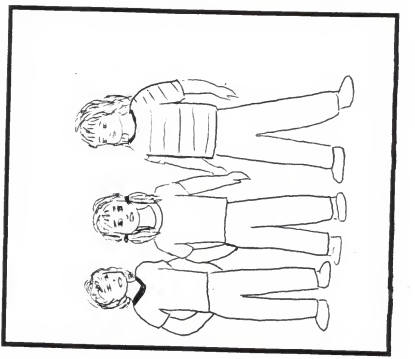
DO YOU:

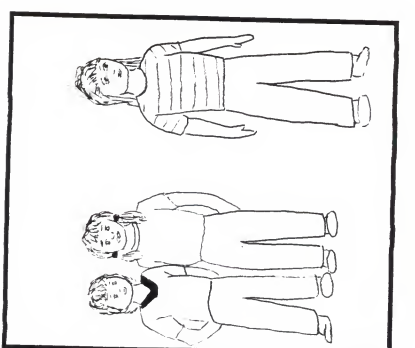
never try to make friends	OR	hardly ever try to make friends
4		3

This girl tries to make friends.

DO YOU:

sometimes try to make friends	OR	always try to make friends
2		1





ITEM 22

This girl listens when others try to help her.

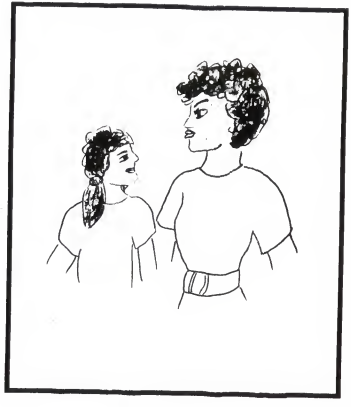
DO YOU:

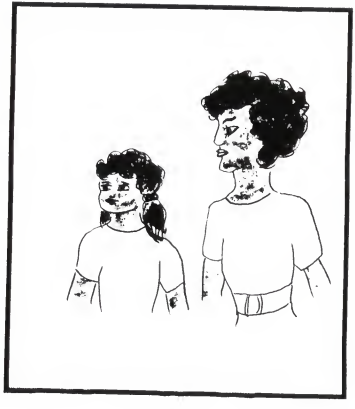
always listen when others try to help	OR	sometimes listen when others try to help
1		2

This doesn't listen when others try to help her.

DO YOU:

hardly ever listen when others try to help	OR	never listen when others try to help
3		4





ITEM 23

This girl waits for other people to start talking to her.

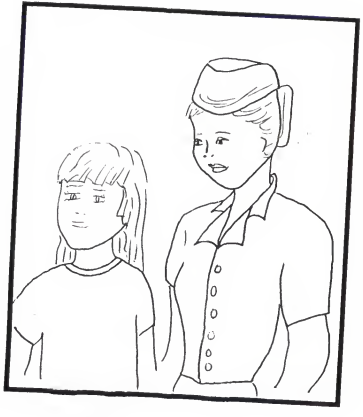
DO YOU:

always wait for other people to start talking	OR	sometimes wait for other people to start talking
4		3

This girl starts talking to other people.

DO YOU:

sometimes start talking to other people	OR	always start talking to other people
2		1



ITEM 24

This girl laughs and smiles at funny things.

DO YOU:

always laugh and smile at funny things	OR	sometimes laugh and smile at funny things
1		2

This girl doesn't laugh and smile at funny things.

DO YOU:

hardly ever laugh and smile at funny things	OR	never laugh and smile at funny things
3		4

ITEM 25

This girl doesn't do what she is told to do.

DO YOU:

never do what you are told to do	OR	hardly ever do what you are told to do
4		3

This girl does what she is told to do.

DO YOU:

sometimes do what you are told to do	OR	always do what you are told to do
2		1

ITEM 26

This girl is nice to be with.

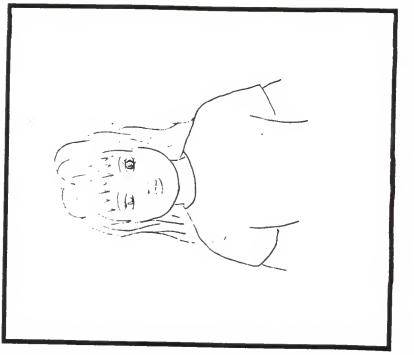
ARE YOU:

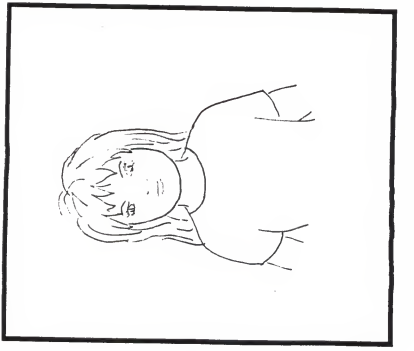
always nice to be with	OR	sometimes nice to be with
1		2

This girl isn't nice to be with.

ARE YOU:

hardly ever nice to be with	OR	never nice to be with
3		4





ITEM 27

This girl doesn't try to get better in the hospital.

DO YOU:

never try to get better in the hospital	OR	hardly ever try to get better in the hospital
4		3

This girl tries to get better in the hospital.

DO YOU:

sometimes try to get better in the hospital	OR	always try to get better in the hospital
2		1

APPENDIX D
DATA COLLECTION PROCEDURES TRAINING GUIDE

(Make sure to present all of the following points:)

Hi. My name is _____. I'm conducting a study with the clinical and health psychology department. We're looking at how children react to being hospitalized. We'd like to ask you to participate in this study. if you agree, I WILL first ask you a few general questions about your child and their living situation. Then I will give you some questionnaires about your child's reactions and about your own feelings since coming to the hospital. These questionnaires will take about 30-45 minutes to complete. Also, we'll ask your child's nurse to fill out a brief questionnaire about their opinion of your child's reaction. While you're completing the questionnaires, we'll ask your child to answer some questions about how they have been feeling during their stay.

(At this point, you must make an assessment of the child's ability to participate. Determine:

A. is the child sleeping?
   1. if yes, does parent mind if we wake them up?
      a. if yes, can we come back in an hour?

B. is the child sedated?
   1. if yes, are they too sedated to participate?
      a. if yes, will it wear off in an hour?

C. is the child developmentally delayed?
   1. if yes, show some questions to parent and ask would child be able to understand them?

D. is the child hearing or sight impaired?
   1. if yes, can child see/hear well enough to participate?

If the final answers to questions A, B, C, and D are no, then we won't be able to evaluate child. Thank parent for time and cooperation, explaining that we must have data from both the child and the parent.

If the child can participate, then say:)

We are also hoping to get more information before your child is discharged. If your child is still here for at least another day we'll try to catch you before you leave and ask you and your child to do the questionnaires again. We hope that with this project we can learn which children are at risk to develop problems in the hospital. We are also trying to find better tests to use to make it easier to help hospitalized children in the future. All information will be kept confidential. Would you be interested in participating?

(Encourage them to participate as much as possible. Make sure to check with child that they are also interested in participating.

If they agree, then give them the informed consent form, skimming and highlighting the sections of the form. On the last page, ask the parent to sign it and, if the child is able and is between 7-17, have them sign it. Then you sign as witness. Give them a copy of the consent form and tell them that, should they have any questions, they can contact me at the phone number on the form.

Assign the family a subject number, write this number on the consent form and remaining forms, and administer the background information questions.

At this point, assess the parent's literacy. If the parent has less than a tenth grade education, read the questions aloud immediately after getting the background information form. If the parent has a higher educational level, then give them the three questionnaires, explaining the directions for each one. Then, go to the first questionnaire and say:)

Okay. Why don't we start with the first question. Which answer seems best for how your child has reacted since they arrived?

(Watch them complete the first three or four questions and observe if they are experiencing any difficulty. If they take too long, say in a easy voice:)

Well, it's probably just faster/easier for me to just read them and I'll check off your answers. Does ...

(and quickly read the first question not already completed. If you're at ease, the parent will think this is normal procedure and won't be uncomfortable.

Once the parent questionnaires are underway, introduce the study to the child, saying the following more or less--be sure to adapt wording to child's age level:)

As I told your mom (and dad), I'm going around talking to the kids in the hospital asking them how they feel about being here. I'll be asking you some serious questions which will be kept secret. We want to try to find out what makes kids have a hard time in the hospital so that we can help other kids when they have to come here. There's no right or wrong answers to the questions. I just want to find out how you feel since you came to the hospital. When we're done, I have some prizes you can choose from to thank you for helping us. Okay? First, I'll show you two pictures and ask you to pick which picture is most like how you have been feeling in the hospital...

(Continue by reading the questions, periodically reminding them that they are to chose the picture which is most like them in the hospital.

If the child is between 8 and 12, then administer the CDI. The revised directions should be :)

Now I'm going to read to you some groups of sentences. For each group, pick one sentence that describes you best since you got to the hospital. Remember, there is no right or wrong answer. Just pick the sentence that best describes the way you have been since you got here. Here is an example of how it works.

(Then read the sample question and continue with the remaining items. Again, remind them periodically that they are to chose the sentence that describes them since they got to the hospital.

When finished with the CDI, select two appropriate toys for the child and ask them to choose one. Thank them for their help.

Check to see if parent is done with questionnaires. If not, decide if you want to wait in the room or come back later to pick them up. If done, thank them profusely. Remind them that someone will be back to collect information before the child is discharged if they are in the hospital for at least another day. Thank them again on your way out.

Now that you're done with the family, find out who the child's nurse is. Track her down and ask her how long she has been working with the child. In order to complete the form, she must have been working with the child for at least eight hours or approximately one shift. If she has, write down the estimated number of hours of contact and give her the form to complete, reading the instructions.

BIOGRAPHICAL SKETCH

My parents were born and raised just outside of Havana, Cuba, and they came to America in the 1960s looking for a better place for themselves and their children. I was born in Newark, New Jersey, but I spent most of my life in Miami, Florida. I graduated from the University of Miami and decided to pursue my graduate work at the University of Florida. When I am not working, I enjoy painting and crafts, writing and reading, and the outdoors.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Sheila Eyberg

Sheila M. Eyberg, Chair
Professor of
Clinical and Health Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Stephen R Boggs

Stephen R. Boggs, Cochair
Assistant Professor of
Clinical and Health Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

James R. Rodrigue
Assistant Professor of
Clinical and Health Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Michael E. Geisser
Assistant Professor of
Clinical and Health Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Faye Gary-Harris
Professor of Nursing

This dissertation was submitted to the Graduate Faculty of the College of Health Related Professions and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 1993

Dean, College of Health
Related Professions

Dean, Graduate School

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